Computerworld's print, Web editions win top honors from the American Society of Business Publication Editors.

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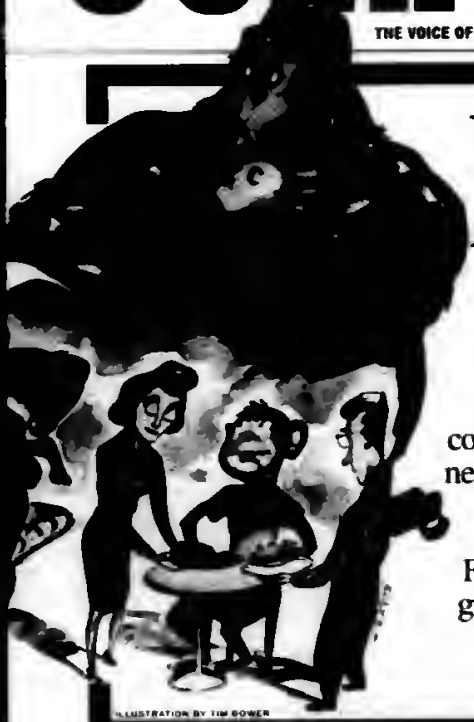

ILLUSTRATION BY TIM BOWER

The Price Point

Companies obsess about cutting costs and boosting sales volumes but neglect the third ingredient of profits:

SMART PRICING.

Fortunately, IT can help by replacing gut feelings with price optimization software, reports Gary Anthes.

PAGE 33

Feds Seek Faster Breach Notices

Legislation would require agencies to publicly disclose data compromises

BY JAIKUMAR VIJAYAN

The governmentwide fallout from the massive security breach at the U.S. Department of Veterans Affairs continued last week, as an influential congressman proposed legislation that would require federal agencies to notify the public if sensitive data were lost or stolen.

The legislation filed by Rep. Tom Davis (R-Va.), chairman of the House Committee on Government Reform, calls for the White House Office of Management and Budget to set disclosure policies and standards for agencies to follow for breaches involving personal data.

The OMB already toughened the internal breach-notification requirements for agencies via a July 12 memo issued by de facto federal CIO Karen Evans. Agencies now must report any incident involving personally identifiable information to the U.S. Department of Homeland Security within one hour of discovering it, Evans wrote. That includes both confirmed and suspected breaches, she added.

INSIDE Page 6

In a statement last week, Davis said his attempt to amend the Federal Information Security Management Act is also aimed at forcing agencies to disclose breaches more quickly. "We have seen too many

Feds, page 14

GM Backs IT Purchasing Standards

Works with DOD, Carnegie Mellon to create procurement guidelines and appraisal system

BY PATRICK THIBODEAU

Many IT shops are adopting standards that detail processes for operations such as software development and help desks. Now there's a new effort to set standards for how technology is purchased, and it involves two of the nation's biggest IT buyers: General Motors Corp. and the U.S. Department of Defense.

Carnegie Mellon University's Software Engineering Institute this month issued a 400-page preliminary report identifying best practices for every aspect of acquiring hardware, software and IT services, from setting service-level agreements to managing the procurement process.

The effort was inspired and sponsored by GM CIO Ralph Szygenda, who has been critical of the general lack of standards in the IT field. He began working with the SEI more than a year ago to create some.

The result extends the SEI's Capability Maturity Model Integration — the five process-maturity levels that are widely used in software development — to purchasing. The software maturity level is set by SEI appraisers who review an organization's practices; a similar rating process will be

Standards, page 45

NEWSPAPER

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PERIODICALS

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Salesforce.com Bites Bullet On Need for More Integration

Adds SAP link to hosted CRM apps

BY MARC L. SONGINI

Salesforce.com Inc. last week rolled out the latest version of its hosted software with added features that include a built-in link to SAP AG's ERP applications. The move is part of an effort by the customer relationship management vendor to address integration shortcomings cited by current and former users.

Several IT managers and corporate executives said that despite its continued momentum in the CRM market, Salesforce.com still faces the inherent limitation of selling a best-of-breed offering that doesn't easily connect with other business applications.

For instance, Tom Kramer, president of San Francisco-based Bella Pictures, said the

Salesforce.com, page 45

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intel Xeon inside

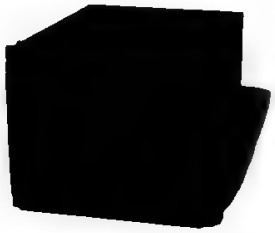
_INFRASTRUCTURE LOG

_DAY 25: They're in the cafeteria!! AAAGGGHHH!! These useless things can't work with each other. They aren't scolable. They oren't responsive. And you can't adjust new capacity on the fly. The horror.

_So many of them, I have to eat standing up. My arches are killing me. And I got avocado an my shirt.

_DAY 26: The answer: IBM BladeCenter® with Dual-Core Intel® Xeon® Processars to boost performance and balance workloads. Its self-automating features make it easy to manage, and it has more blades per chassis for a smaller footprint. The BladeCenter even opened up its specs, so the things we buy today can work with the things we buy tomorrow.

_I can eat my turkey-avocado sandwiches in peace again. Mmmmm...



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Special Delivery

In the Technology section: As e-mail becomes a mission-critical application and the volume and size of messages explode, IT is scrambling to monitor and improve the systems that keep the mail flowing. **Page 20**

Conducting IT

In the Management section: Aligning IT with the business is a lot like conducting an orchestra, says Accenture CIO Frank Modruson. He offers some hints to help IT and the business make beautiful music together. **Page 38**

NEWS

6 The U.S. House and Senate have proposed reductions in the Census Bureau's fiscal 2007 budget that could quash a planned $600 million rollout of handhelds.

7 OpenSSL is again off-limits to government agencies after the group that certifies encryption technologies suspended its validation of the open-source software.

7 The GAO says the feds need stronger processes for identifying and overseeing high-risk IT projects. But the government's top technology executive disagrees.

10 Microsoft, despite users' criticism of its Windows Genuine Advantage antipiracy tool, says it plans to go forward with a similar tool for Office.

10 An industry group certifies 20 electronic health record products after testing their functionality, interoperability and security.

12 The heat wave last week generated power problems for some data center managers.

12 Microsoft and open-source virtualization vendor XenSource extend an alliance to include the next version of Windows Server.

16 Global Dispatches: India has blocked access to 17 Web sites and blogs following the July 11 train bombings in Mumbai.

17 Microsoft and Nortel said they plan to team up to develop and market unified communications tools. But Nortel users were mixed on whether the deal will give the company a big boost.

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24 Q&A: Data: Back From the Dead. What happens when you send that failed disk drive off to a recovery specialist? E..perts at Ontrack Data Recovery provide a look into what they do.

26 Geek's Garden. This week's stroll through the technology landscape features pileups in strained silicon, a breakthrough in photonics and developments in databases.

28 Security Manager's Journal: 'By the Way, We Have an Acquisition in Progress.' Mathias Thurman has to scramble upon learning that a deal to acquire a smaller company will soon be signed.

30 QuickStudy: The Singularity. Futurists such as Ray Kurzweil describe a point in time when technical progress will allow machine and human intelligence to merge in what they call the Singularity.

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33 The Price Point. Companies struggle to cut costs and boost sales while often ignoring how pricing can affect the bottom line. IT has made it possible to price smarter, but culture and management often stand in the way.

36 Q&A: The Ultimate Question. Would your customers recommend you to their friends? That question — and IT's role in affecting the answer — is what separates winning companies from the rest, says author Fred Reichheld.

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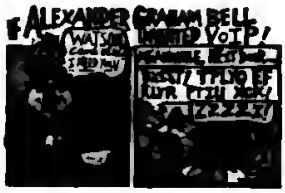
8 On the Mark: Mark Hall learns that VoIP quality of service is sinking even as the use of VoIP technology grows rapidly. But IT isn't using the right tools to fix it.



18 Don Tennant reflects that being a leader sometimes requires following those who are led. But Intel, the leader of the microprocessor industry, finds itself following AMD in a less admirable sense.

18 David Moschella sees Bill Gates' move away from the day-to-day churn at Microsoft as evidence of some poker wisdom.

31 Jay Cline says this is no time for a one-size-fits-all two-factor authentication strategy.

39 Barbara Gomolski is thinking about who will build and manage electronic patient records, and the answer may have implications for your business.

46 Frank Hayes lists 12 things Microsoft can do that will make it a company with both competitive and desirable products.

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ONLINE

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What You Need to Know About IPv6

NETWORKING: How IPv6 works, when it's coming and what it means to you.
www.computerworld.com/networking

Can't Find a Job?

CAREERS: Despite a strengthening IT employment market, some professionals are having little luck landing new positions. Columnist Katherine Spencer Lee explains why.
www.computerworld.com/careers

Which WLAN Architecture Wins?

MOBILE/WIRELESS: You would think that a standard for wireless LAN architectures would have been developed by now. But you would be wrong.
www.computerworld.com/mobilewireless

The Art of Network Troubleshooting

NETWORKING: A networking pro says basic techniques coupled with a core-level understanding of networking beat all those fancy sniffers, analyzers and monitors.
www.computerworld.com/networking

Getting a Grip on Net Neutrality

NETWORKING: "Net neutrality" is a big buzzphrase this summer, but what does it mean, and how will it affect the Internet's future?
www.computerworld.com/networking

Review: Jabra JX10 Is a Headset With a Light Touch

MOBILE/WIRELESS: The featherweight Jabra JX10 Bluetooth headset is so small that after putting it on, our reviewer barely noticed it was there. Except for an occasional hiss, the sound quality is great too.
www.computerworld.com/mobilewireless

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AT DEADLINE

Microsoft Reports Q4 Revenue Gains

Microsoft Corp. reported revenue of $11.8 billion for its fourth quarter, up 18% from the same period last year and above Wall Street's expectations. Net income for the quarter, which ended June 30, fell 24% from the year-earlier level to $2.83 billion. However, excluding legal charges, the software vendor topped the forecasts of financial analysts on operating income in addition to revenue.

Dell to Fall Short On Profits and Sales

Dell Inc. warned that profits for its second quarter, which ends this month, are likely to be about one-third lower than expected because of pricing pressures. Dell also said it will fall short of its revenue target for the quarter, but by a smaller percentage. Revenue is expected to total about $14 billion, compared with earlier forecasts of $14.2 billion. Dell, which had a weaker-than-expected first quarter, will report the second-quarter numbers on Aug. 17.

IBM Posts Higher Income in Quarter

Despite problems in its server and services units, IBM reported a $2 billion profit for the second quarter, up from $1.9 billion in the same period a year ago. Revenue fell 2% from last year's level to $21.9 billion. IBM said that some server orders couldn't be fulfilled and that contracts for short-term services were lower than expected. But the company's software, microelectronics and mainframe businesses all had strong performances.

U.S. Sales Fuel Increase at SAP

SAP AG reported a 43% year-to-year increase in net income for the second quarter, with software license revenue increasing 8% largely because of higher sales in the U.S. Revenue for the second quarter totaled €2.2 billion ($2.8 billion U.S.), up 8% from last year's level.

Budget Cuts Could Ax Census Handheld Plan

House, Senate reduce funding request, raising questions about $600M project

BY MATT HAMBLEN

THE FUTURE of a planned $600 million handheld deployment by the U.S. Census Bureau is in question as a result of the fiscal 2007 funding bills approved by the House and Senate, which both reduced the White House's requested amount for census operations.

Although a conference committee won't determine the final budget numbers until later this year, Rep. Frank Wolf (R-Va.) plans to hold a special hearing on Thursday to discuss the census budget. Wolf chairs a subcommittee of the House Appropriations Committee that oversees the U.S. Department of Commerce and the Census Bureau.

One of the topics to be considered at the hearing is whether the proposed funding bills would threaten the planned rollout of 500,000 wireless handheld devices for census takers to use during the 2010 national census, an aide to Wolf said last week.

Wolf said the reduced funding approved by the House and Senate "would be devastating" to the Census Bureau, although he didn't specify that the cuts would automatically kill the handheld project.

Gauging the Impact

Census Bureau officials wouldn't comment about the proposed reductions or the future of the handheld project, saying only that they are monitoring the ongoing budget process. The handheld rollout plans remain intact for now, a bureau spokesman said.

The spokesman said that the bureau sent an impact statement about the proposed budget cuts to House members in June. But he wouldn't disclose any of the impact statement's contents because it hasn't been released publicly.

The White House initially proposed funding of $878 million for Census Bureau operations in fiscal 2007, which starts Oct. 1. The House last month approved a budget proposal that would give the bureau $824 million, while the Senate last week set its funding level at $828 million.

The Census Bureau in April awarded a five-year contract for the handheld rollout to a team of vendors led by Harris Corp. The pocket-size devices are slated to run Windows Mobile 5.0 and be made by a manufacturer in Taiwan. Census officials have said that the use of handhelds should save "millions of dollars" by reducing the time it takes to gather data, improving its accuracy and minimizing the need to process paper census forms.

But the costs of the handheld program and the census process as a whole have been called into question by Sen. Tom Coburn (R-Okla.), chairman of a subcommittee on federal financial management. He has urged the bureau to conduct the census online, following the practice of Canada and several other countries. Coburn is concerned about projections that the 2010 census will cost more than $11 billion, almost twice the cost of the 2000 census, an aide said last week. ▸

Computerworld Honored for Top Print Publication, Web Site

BY COMPUTERWORLD STAFFERS
CHICAGO

In a testament to the integrated nature of its print and online editorial operations, *Computerworld* last week was named 2006 Magazine of the Year and was given the gold award in the Overall Web Publication category by the American Society of Business Publication Editors.

At a national awards banquet held here in conjunction with the annual ASBPE conference, *Computerworld* received the print honor in the over-80,000 circulation division. The Magazine of the Year award in the under-80,000 circulation category went to *CSO*, marking the second time in three years that the top award was swept by publications of parent company International Data Group. *Computerworld* and *CSO* also won the Magazine of the Year awards in 2004.

The judges said *Computerworld* is "packed with so much useful information" and contains "relevant, useful graphics." There is "never a fluffy issue," they said, adding that what *Computerworld* does is "difficult for any monthly magazine, and they do it weekly." Judging was based on criteria that included writing, reporting and editing; usefulness to the reader; editorial organization; interaction with readers; and layout and design.

"This is a huge honor," said Don Tennant, *Computerworld*'s editor in chief. "It says a ton about the talent and professionalism of the people whose hard work made this happen. They have a lot of fun, but when it comes to ensuring that our online and print readers get what they rely on us for, the editorial team is deadly serious."

In addition to the Magazine of the Year and gold Overall Web Publication honors, *Computerworld* received eight national awards for editorial content and three national awards for print design.

"*Computerworld*'s strong showing at the ASBPE awards again this year is a testimony to the teamwork involved in living up to our 'Voice of IT Management' moniker," said Matthew Sweeney, *Computerworld*'s president, publisher and CEO. "The quality and usefulness of our content — in print, online and at our events — are at the core of everything we do."

Founded in 1964 and based in Wheaton, Ill., ASBPE is a professional association of writers and editors in the business and trade press. ▸

Security Validation of OpenSSL Encryption Tool Uncertain

Group that certified the technology has changed its mind — again

BY JAIKUMAR VIJAYAN

A joint U.S. and Canadian organization that certifies encryption tools for use by federal government agencies has suspended its validation of OpenSSL cryptographic technology for the second time in less than six months.

The decision means that government agencies for the two countries can't purchase the tool for the time being, although those that have already done so will still be allowed to use it. OpenSSL is an open-source implementation of the Secure Sockets Layer (SSL) and Transport Layer Security protocols. It is widely used to encrypt and decrypt data on the Internet.

The decision to suspend validation of the tool came just two days after the group doing the validation, the Cryptographic Module Validation Program (CMVP) at the National Institute of Standards and Technology (NIST), had taken the harsher step of rejecting the tool entirely.

News of the rapid changes to the validation effort drew criticism from the Open Source Software Institute (OSSI), a nonprofit group in Hattiesburg, Miss., trying to get the OpenSSL encryption module validated for government use. John Weathersby, the OSSI's executive director, alleged that the move appears to have been influenced by vendors of proprietary technologies that stand to lose a lucrative market if an open-source alternative is certified.

"There are some vendors fighting like hell to make this die, and I can see why," said Weathersby. "This is not a technology issue; this is a political issue."

In January, OpenSSL received its precedent-setting validation from the CMVP, which is charged with validating and certifying that cryptographic tools sold to government agencies meet the requirements of the Federal Information Processing Standard (FIPS) Publication 140-2.

Currently, agencies looking for encryption capabilities spend hundreds of thousands — and in some cases millions — of dollars licensing proprietary cryptographic tools.

In an e-mailed statement, NIST confirmed the "not-available" status but offered no reasons for it.

Already, the OSSI has been required to make a continuing series of tweaks to OpenSSL at the request of the CMVP, said Steve Marquess, the open-source group's validation project manager.

Part of the problem stems from the fact that the FIPS requirements were written for hardware-based encryption tools, while OpenSSL is software-based. As a result, mapping the FIPS requirements to OpenSSL has been challenging, Marquess said.

Vendors of commercial products have also raised a constant stream of technology-related questions that have proved time-consuming to address, Marquess said.

George Adams, president and CEO of SSH Communications Security Inc., a Wellesley, Mass.-based vendor of encryption products, said that concerns about the use of OpenSSL in government environments are valid. As an open-source tool, OpenSSL is subject to constant changes that would invalidate its certification on a regular basis, he said.

Marquess dismissed such concerns. He said that the security policy associated with OpenSSL guarantees that the source code used to generate the cryptographic module is unmodified at all times.

GAO Calls for Better Tracking Of Federal High-Risk IT Work

But de facto CIO dismisses findings

BY DAN TENNANT

The U.S. Government Accountability Office said in a report released last week that the federal government needs to strengthen its processes for identifying and overseeing high-risk IT projects. But the GAO's recommendations were all rebuffed by Karen Evans, the de facto federal CIO.

The GAO's report assessed processes put in place in response to an August 2005 directive in which the White House Office of Management and Budget ordered agencies to identify high-risk projects and provide quarterly reports on those failing to meet certain performance criteria.

The report summarized the progress that agencies have made in adhering to the directive but said they haven't always consistently identified high-risk projects. The GAO found several projects that appeared to meet the OMB's definition of "high risk," but the agencies didn't classify them as such.

The GAO also chastised the OMB for failing to fully assist the agencies in complying. For example, its report cited a lack of clarity in the directive and said that the OMB could have done much more to ensure its success. The budget office needs to streamline the procedures that agencies use to submit their quarterly reports, the GAO said, noting that inconsistencies could exist between OMB and agency records.

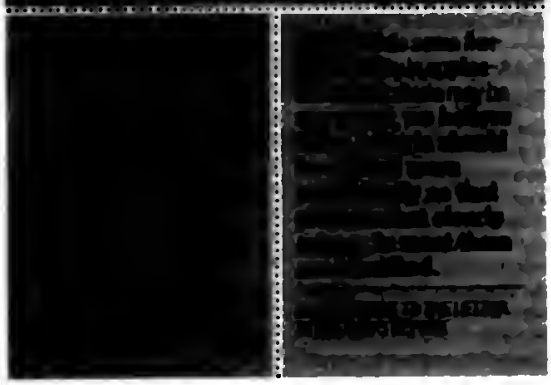
According to the report, the OMB also hasn't compiled a single, aggregated list of the high-risk projects, which limits its ability to track the full set of IT investments requiring special oversight.

And, as the report noted, big money is at stake. Within the 24 agencies that fall under the August 2005 directive, the GAO tallied 226 IT projects that were classified by their respective agencies as high risk. The report said the total funding requested for the projects in fiscal 2007, which starts Oct. 1, is $6.4 billion — about 10% of the Bush administration's overall IT budget request.

The GAO recommended that the OMB direct agencies to consistently apply its criteria for designating projects as high risk and establish "a structured, consistent process" for updating project data. It also called on the OMB to create a unified list of high-risk projects and their deficiencies.

But Evans, whose official title is OMB administrator for e-government and IT, was adamant in a written response to the GAO that its suggestions were based on inaccurate assumptions and interpretations.

War of Words



Evans added that the GAO's report contradicted itself on the need for the OMB to provide agencies with further guidance on identifying high-risk projects.

"The report incorrectly implies agencies will not be able to oversee their own projects without additional guidance on this narrowly focused process, when in fact the report itself suggests agencies are using this policy as an opportunity to improve their internal oversight," she wrote.

Evans also disputed the need for an aggregated list of high-risk projects, noting that the OMB uses the reports from agencies "in the larger context of [its] budget and program oversight processes."

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War of Words

> **"The process and the criteria for designating projects as high-risk are clear, and some flexibility in the application of the criteria is essential. We do not believe flexibility in the process equals inconsistency in the application."**
>
> FROM THE LETTER SENT TO THE GAO BY DE FACTO FEDERAL CIO KAREN EVANS

> **"While some flexibility in application of the criteria may be appropriate, we believe these criteria should be applied more consistently so that projects that clearly appear to meet them are identified."**
>
> A RESPONSE TO THE LETTER IN THE GAO'S REPORT

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Tennant is an editorial intern at Computerworld.

BRIEFS

Microsoft Releases New Build of Vista

Microsoft Corp. has released another interim build of Windows Vista to about 500,000 beta testers and other early users in preparation for the arrival of Release Candidate 1, which is due Aug. 31. Build 5472 reduces the number of prompts and dialogues involved in setting up and controlling user accounts, and it also optimizes Windows Media Center start-up and shutdown routines, according to Microsoft.

Intel's Profits Fall On Soft Chip Sales

Intel Corp. posted a profit of $885 million for the second quarter, less than half of the $2 billion it earned in the same period last year. Revenue plummeted from $9.2 billion a year ago to $8 billion, Intel said, citing factors such as decreases in microprocessor shipments and pricing, as well as a loss of market share to rival Advanced Micro Devices Inc. AMD reported big increases in revenue and profits for the second quarter, but it fell short of sales goals because of soft microprocessor demand.

SAS to Close Two Training Facilities

SAS Institute Inc. confirmed that it plans to close two regional training centers in September, a move that follows the recent elimination of about 170 sales and marketing positions. However, the Cary, N.C.-based vendor of business intelligence tools described the cutbacks as "a reallocation of resources" and said it expects to increase its overall head count this year. SAS now has about 10,000 employees.

Short Takes

ORACLE CORP. issued 65 software patches as part of its quarterly security update. . . . Brad Smith, MICROSOFT's general counsel, said the company will follow the principles of its antitrust settlement with the U.S. government beyond the expiration of the deal late next year.

ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY BUZZ BY MARK HALL

IF ALEXANDER GRAHAM BELL INVENTED VoIP!
WATSON, COME HERE! I NEED YOU!
MEANWHILE, NEXT DOOR...
DXSST/ TPLYQ EF KLYR PTIU XCK/
ZZZZZ!

MATTHEW FARMER

Listen Up! VoIP Quality . . .

. . . of service is bad and getting worse. And IT is using the wrong tools to measure the aural performance of voice-over-IP calls. After looking at 18 months of data gathered on Brix Networks Inc.'s *www.testyourvoip.com* Web site, Kaynam Hedayat, the Chelmsford, Mass.-based company's chief technology officer, found that end users rated one out of five VoIP calls "unsatisfactory" using the telecommunications industry's standard mean opinion score (MOS) metric. Hedayat admits to being surprised, having expected a 90% to 95% satisfaction rate among callers. Worse still, he says, the data indicates that things are getting, well, worse. "Voice quality is actually decreasing on the Internet," Hedayat says, speculating that increasing data traffic, particularly video streams, is contributing to the problem. "Going blindly into voice over IP and expecting the same quality as POTS is not realistic," he cautions, referring to plain old telephone service.

Benjamin Ellis, vice president of marketing at Psytechnics Ltd., a voice technology test and measurement firm in Ipswich, England, contends that IT looks at the problem incorrectly when it just analyzes the IP part of the VoIP equation. "Using IP tools to measure a system doesn't tell you about the voice bits that determine voice quality," he says. For example, losing 10% of a session's packets may not affect a call's MOS results. But losing a different 10% of the packets could make the call unbearable.

Ellis says you need to go beyond the usual IP metrics of jitter and packet loss and focus on session-layer data that better shows the characteristics of a voice call. When you sign up your company for a VoIP service, he says, demand metrics based on perceptual evaluation of speech quality, a standard developed by Psytechnics, BT Group PLC and other companies, under the auspices of the International Telecommunication Union. For more information, go to *www.pesq.org*.

Hola, amigo. ¿Qué es nuevo . . .

. . . in the world of IT? Well, how about a bilingual personalized 511 service? If you live in an urban region of the U.S. that offers 511 traffic reports, you know how they can help your company's mobile staffers get around. Residents of some cities in North Carolina and Florida will soon be able to sign up for an English or Spanish "concierge service" that will call you if your stored profile indicates you could encounter traffic problems, says Fred Korangy, CEO of LogicTree Corp. in Bowie, Md. His company's Extreme Recognition Framework recognizes which language you're using and offers information accordingly.

Korangy explains that the 511 service gets real-time feeds of traffic conditions directly from highway sensors and other reports and then translates the data for callers. He says the system is tuned to interpret calls received on lousy cell phone (and maybe VoIP) connections. The free concierge service is scheduled to go live in September.

Vendors think they're leaders, but . . .

. . . users don't necessarily follow. Josh Weiss, a project manager at Sage Research Inc., the technology division of Boston-based research firm Chadwick Martin Bailey Inc., says analysts at his company wondered whether the perceived leadership status of an IT vendor, such as its advanced technology or famous executive management team, affected your buying proclivities. So late last year, Sage self-funded a survey

of 643 IT executives. Its conclusion: "Leadership is not a determining factor," Weiss says. "Ultimately, it does not matter." So, what does matter? Products. According to those polled, "product excellence" is the primary factor when it comes to plunking down bucks. Weiss says that was twice as important as the next vital quality, which was how a vendor interacts with its customers. Overall, IBM and Cisco Systems Inc. came out as the top two vendors in the survey. The worst? Telecommunications service providers. Of the eight evaluated, not a single one cracked the top 10 list on any metric.

Vendors seek to improve user . . .

. . . experience through a new organization. This week, Dell Inc., Microsoft Corp., Epson America Inc. and other IT vendors kick off the CIM Forum, which will focus on customer interaction management with corporate users. Dan Vetras, CEO of forum co-founder Talisma Corp. in Bellevue, Wash., says the new group's purpose is to share best practices for improving the experiences of users when they contact a vendor about a problem — whether it's by phone, e-mail, chat, a self-help Web site or other means. Vetras says the forum will provide vendors with effective methods for everything from routing rules "down to where you put icons on your Web page." If you aren't happy with your vendor, nudge it toward contacting the forum to get some help.

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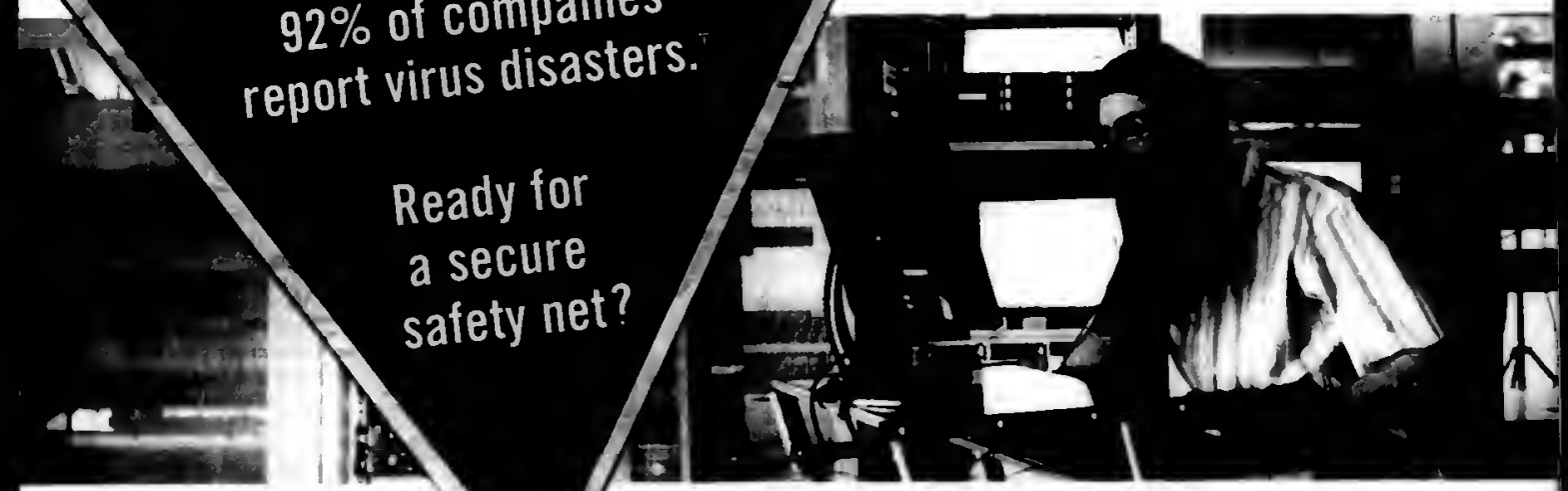

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*Cyber Security: A Crisis of Prioritization, February 2005.

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3COM APC SONY

Microsoft Defends WGA, Plans Similar Tool to Validate Office

Claims antipiracy software has failed only a small number of legitimate PCs

BY ERIC LAI

DESPITE THE criticism leveled at Microsoft Corp. after its recent rollout — and partial rollback — of Windows Genuine Advantage (WGA), that tool was just the first phase in the company's latest antipiracy effort.

The broader Genuine Software Initiative will include a similar campaign, built around a tool called Office Genuine Advantage, to fight piracy of Microsoft's dominant desktop applications suite.

Microsoft began testing OGA in April and said last week that the company is "absolutely committed" to going forward with the software, although it wouldn't elaborate on when the tool will be officially released.

WGA, which began an escalated rollout in April, has been criticized as spyware for stealthily installing itself on PCs, sending information back to Microsoft and nagging users who refused to install the tool. The software vendor turned off most of those features in late June.

Reports of WGA falsely crying wolf about legitimate copies of Windows XP have also abounded. Most of the people claiming to be victims have been gamers or PC hobbyists who had upgraded their hardware. But some have been businesses, such as S&S Cycle Inc., a maker of motorcycle racing parts in Viola, Wis.

Because WGA failed to recognize the company's 180 PCs as legal, it rescanned them every morning and sent back so much data to Microsoft that "our network came to a screeching halt," said S&S network administrator Karen Zander. She eventually fixed the problem by working with Microsoft technical support.

Microsoft responded to the criticisms last week by releasing statistics about WGA's purported effectiveness via blog postings by Alex Kochis, a licensing manager on the WGA team. Kochis claimed that only "a fraction of a percent" of the 60 million or so PCs that have been reported by WGA thus far were running legitimately licensed copies of Windows XP (see chart).

Points of Failure

A Microsoft spokeswoman declined to say how often the test version of OGA finds false positives. But on its tech-support Web site, Microsoft says that OGA can fail to validate a legitimate copy of Office XP or Office 2003 for a number of reasons, including if a PC's time setting is off by more than 24 hours or if the system registry has been modified or damaged.

Adrian Kingsley-Hughes, a U.K.-based technology consultant who runs a blog called "The PC Doctor," said OGA

mistook his copy of Office for a pirated one after he downloaded and ran the tool. "No idea why I had problems," he said. "I was quite surprised when it said it didn't check out."

Joshua Erdman, president of software reseller Digital Foundation Inc. in San Luis Obispo, Calif., said that he thinks Microsoft will proceed more cautiously with OGA than it did with the Windows tool.

"Microsoft has almost no competition with Windows," he said. "With Office, it's a lot easier to switch to something like OpenOffice or StarOffice. So Microsoft can't afford to [anger] people as much."

Other observers said that as Microsoft moves toward a hybrid licensing model with both installed software and hosted services, it will need tools like WGA and OGA to continually scan customers' computers and verify that they're covered.

But it has to be careful, warned Lauren Weinstein, an IT consultant in Woodland Hills, Calif., and co-founder of the privacy advocacy group People for Internet Responsibility. "Microsoft is starting to tread a thin line that has quite an abyss on either side," Weinstein said. "If people feel that Microsoft is acting too aggressively, they'll find some way to go to other products."

In Move to Reassure Doctors, 20 EHR Products Are Certified

BY HEATHER HAVENSTEIN

In a move to bolster the acceptance of electronic health record tools by doctors who may be wary of the cost of the software and potential interoperability problems, the U.S. Department of Health and Human Services last week announced the first 20 EHR products to be certified to meet national standards.

Users said the certifications will help reassure them that the products they have purchased will eventually interoperate with other software as they begin to exchange patient information regionally.

The tools — designed to be used in physicians' offices — were certified by the Certification Commission for Healthcare Information Technology. The voluntary private-sector organization was created in 2004 by three industry associations to certify health IT products. The goals of the certification program are to reduce the risk of IT investment by physicians, ensure the interoperability of the products and protect the privacy of patient health information.

> **"It was hard to figure out who the players were going to be when the dust settled."**
>
> TOM FRICKS, CIO, HARBIN CLINIC

Tom Fricks, CIO at Harbin Clinic in Rome, Ga., said it was reassuring to see that the TouchWorks Electronic Health Record software from Allscripts LLC that the practice rolled out between 2002 and the end of 2005 was among the certified products.

In 2002, when Harbin Clinic purchased the software, "it was hard to figure out who the players were going to be when the dust settled" in the EHR market, he said.

However, the most significant aspect of the announcement for his organization, Fricks said, was the commission's work to certify interoperability of the different software packages.

Although the clinic's 130 doctors represent about half of the town's physician population, Harbin is the only group in Rome that has an advanced EHR system in place, he said.

"It's reassuring . . . that there is the potential for those groups to come up on an [EHR system] that will allow us to exchange information with them," Fricks said.

As of December 2005, Harbin had eliminated all non-electronic documents from the practice; next month, the clinic forecasts that it will surpass 1 million electronic prescriptions written using the EHR system.

Looking for Reassurance

Joe Paul, director of information systems at Morgan Haugh Medical Group, a multispecialty physician practice in Mayfield, Ky., said the first thing he did when he heard the certification announcement was to check to see if the Horizon Ambulatory Care Vision software from McKesson Corp. that his group uses had made the list.

"I found it comforting that they were on there," Paul said.

The certification will aid Morgan Haugh's plans to eventually be able to exchange medical information about its patients with other health care providers, he added.

HHS Secretary Mike Leavitt said that the certification process means that "the possibility of doctors making a mistake in purchasing a system would be drastically reduced."

Among the vendors whose ambulatory EHR products received certification were market leaders Allscripts, Cerner Corp., eClinicalWorks LLC, Epic Systems Corp., GE Healthcare, McKesson and Misys Healthcare Systems.

Mark Leavitt, chairman of the commission and no relation to the HHS secretary, said that the products were required to meet all of the 250 criteria for ensuring that the tools function as the vendors claim. Although he declined to say whether any products that had been submitted for testing had not met the standards, he said that more than 24 companies had applied for certification. So far, 20 have been certified, but some tests still are under way, Leavitt said.

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BRIEFS

System Delivery Snafu Taxes IRS

Internal Revenue Service officials told the U.S. Senate Finance Committee last week that the initial lack of an automated system for detecting refund fraud could cost the federal government $200 million to $300 million this year. The IRS said Computer Sciences Corp. failed to deliver a new system after the agency had pulled the plug on its previous one last fall. The older system has since been restored. CSC declined to comment on the situation.

Software Error at Verizon Inflates Bills

Verizon Communications Inc. said it overbilled about 11,000 customers in the mid-Atlantic region late last month because of a software programming error that resulted in their calling plans being inadvertently changed. The New York-based telecommunications company fixed the error three days after it was discovered and is correcting the bills of affected customers.

Microsoft Pulls Plug On Private Folders

Responding to pressure from corporate IT managers, Microsoft Corp. has pulled a free tool called Private Folder 1.0 off its Web site. Systems and network administrators had voiced concerns that the tool, which lets Windows users create password-protected folders, could be used to hide inappropriate content or maliciously store files so they couldn't be accessed by other workers.

Short Takes

MICROSOFT said it has filed 26 lawsuits against alleged dealers of pirated software in seven states. . . . Dulles, Va.-based AOL LLC has launched a free version of its instant messaging software that's designed for business users, with features such as message encryption, virus scanning and Microsoft Outlook integration.

Data Center Managers Cope With Heat Wave, Power Outages

Reliability raises new power issues

BY PATRICK THIBODEAU

LAST WEEK'S heat wave pushed electricity demand to record-setting levels in several regions, triggering brownouts, scattered outages and anxious times for some data center managers.

Although data centers are generally prepared for power interruptions with uninterruptible power supply (UPS) systems and generators, the stress that a heat wave puts on power supplies can reveal new issues, said Kern Weissman, director of infrastructure and network systems at CD&L Inc.

Utility problems in New York affected a three-phase power supply in CD&L's secondary data center, but the company's UPS system didn't immediately alert the IT staff to reduce voltage on one of the phases.

"The heat wave exposed an area of risk that I hadn't considered," said Weissman. There was no system downtime, but new automated alert procedures were implemented.

Unfortunately, there wasn't a thing Weissman could do about the brownout that reduced the power in most electrical outlets at his Queens home. "I only have two active full sockets that are working. It's pretty miserable," Weissman said last week.

Customers' Help

Utilities struggling to meet the peak demand asked business customers to help cut power usage. Slumberland Inc., a 100-store furniture retailer in Little Canada, Minn., responded to such a request by removing its corporate headquarters, distribution center and a retail outlet from the local utility's power grid and powering them with a generator instead, said Seth Mitchell, infrastructure team manager.

Slumberland's data center remained connected to the power grid and was unaffected by the heat, Mitchell said. The company is using American Power Conversion Corp. monitoring and UPS systems and can switch over to its generator in 12 seconds if needed. Even so, the company is seeking more protection by installing a second air-cooling system in its data center this week and has plans for a second generator. "Pretty much every year, the power in this season is not reliable," Mitchell said.

Power reliability will only get worse for data centers because the reserve electric capacity is declining nationwide, according to Kenneth Brill, executive director of The Uptime Institute Inc. in Santa Fe, N.M. The U.S. isn't investing enough in building new power-generation capacity, Brill said, so the message for data center managers is, "You'd better know that your generators work."

To avoid overheated servers, Brill urged data center managers to make sure that their cooling systems are delivering at rated capacity. He said many cooling units don't because of clogged filters, slipping belts and refrigerant that's not fully charged. If the air cooling system isn't meeting a data center's needs, Brill said, "the day you would discover that is on a hot day."

Power Records

Electricity demand broke records around the U.S. last week. A sampling, in megawatts:	2006 record (to date)	Previous record
Southern New England (July 18)	27,374 MW	
Tennessee Valley Authority (July 18)	32,037 MW	
Nevada Power Co. (July 17)	5,618 MW	
Xcel Energy Inc. (Minneapolis, July 14)	9,622 MW	

Microsoft Extends Deal With Virtualization Partner

BY ERIC LAI

Microsoft Corp. and open-source virtualization software vendor XenSource Inc. expanded their unlikely alliance last week, agreeing to work together to make the next version of Windows Server interoperable with Xen-enabled Linux distributors.

The two companies said that companies using the Longhorn release of Windows Server will be able to run multiple instances of Windows and Linux on a single system, including versions of the open-source operating system that support the Xen technology. In addition, Microsoft will provide technical support for Xen installations.

The plan to integrate the technologies "is good from a Xen standpoint," said Charles King, an analyst at Pund-IT Inc. in Hayward, Calif. The deal will enable XenSource to create a multi-operating-system virtualization platform, King said. He added that it's also a smart move "for Microsoft to acknowledge that Linux is not going to go away from the corporate data center."

Better Performance

Microsoft already lets companies using its Virtual Server 2005 software on top of Windows Server 2003 run multiple instances of Windows and Linux as guest operating systems, said Jeff Price, senior director of the Windows Server group. But as a result of Microsoft's alliance with XenSource, the Longhorn release of the server operating system should provide better performance and more manageability, he said.

For now, there is only one Xen-enabled Linux distribution available: Novell Inc.'s SUSE Linux Enterprise Server 10 software, which the company officially rolled out last week. Red Hat Inc. is expected to follow with a Xen-enabled update to Red Hat Enterprise Linux by year's end.

In April, Palo Alto, Calif.-based XenSource agreed to license Microsoft's Virtual Hard Disk format. That allows its upcoming XenEnterprise "hypervisor" — the technology actually used to create multiple guest operating systems — to import virtual machines created under Microsoft's current version of Virtual Server.

XenEnterprise is expected to be released this quarter. With it, the Xen technology will also compete with Microsoft's virtualization offerings, as well as with products from market leader VMware Inc.

Gordon Haff, an analyst at Illuminata Inc., said Xen is "still quite new technology that will take some time to prove itself out in the market." The deal between Microsoft and XenSource should help in that regard, Haff added.

King concurred. "For XenSource to survive, it has to support more than Linux," he said.

Longhorn is currently slated for release by the end of 2007. A beta version of the operating system's built-in hypervisor, which will succeed Virtual Server 2005, is expected by the end of this year, Price said.

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Feds

recent examples when sensitive data has been lost or stolen and agencies have moved too slowly to acknowledge the problem and take steps to limit the potential damage," he said.

For instance, the theft of a laptop PC and external disk drive that triggered the breach at the VA took place on May 3. VA Secretary R. James Nicholson wasn't informed of the incident until May 16, and the agency waited another seven days before it publicly disclosed the breach.

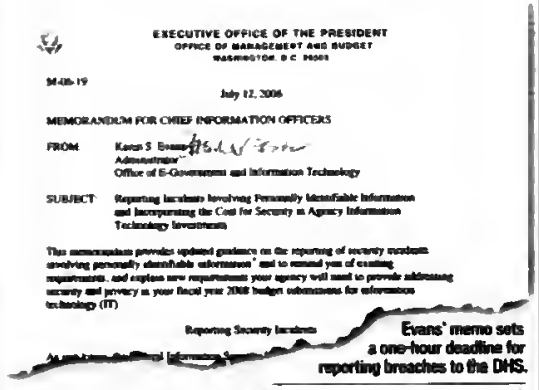
At a hearing held by the Senate Committee on Veterans' Affairs last Thursday, Nicholson testified about the dilemma he had faced over whether the VA should further delay the disclosure or go public with the news and potentially alert the thief about the kind of data that the stolen equipment contained. "We had a very big powwow, and there were pros and cons, and I made the decision that we needed to inform," he said.

New Mood on Capitol Hill

But as evidence of the mood in Washington, Sen. Richard Burr (R-N.C.) told Nicholson that Congress should have been immediately notified about the breach. "There should be no debate [about that]," Burr said.

Under the OMB's modified policy on internal breach disclosures, the one-hour reporting requirement now applies to incidents involving the improper use of sensitive data, such as storing it on a home computer without adequate protection, said Gartner Inc. analyst John Pescatore. Previously, only breaches involving unauthorized access to data had to be reported so quickly.

The memo sent by Evans to federal agency CIOs represents a step forward in the government's thinking on information security, Pescatore said. Agencies will likely be challenged to meet the one-hour reporting deadline for all incidents, he acknowledged.



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

M-06-19

July 12, 2006

MEMORANDUM FOR CHIEF INFORMATION OFFICERS

FROM: Karen S. Evans
Administrator
Office of E-Government and Information Technology

SUBJECT: Reporting Incidents Involving Personally Identifiable Information and Incorporating the Cost for Security in Agency Information Technology Investments

This memorandum provides updated guidance on the reporting of security incidents involving personally identifiable information and to remind you of existing requirements, and explains new requirements your agency will need to provide addressing security and privacy in your fiscal year 2008 budget submissions for information technology (IT).

Reporting Security Incidents

Evans' memo sets a one-hour deadline for reporting breaches to the DHS.

But, he added, requiring them to file notices more quickly could allow the government's incident response teams to take faster action on breaches.

Much depends on the kind of reporting structure and escalation processes that exist within an agency, said Bruce Brody, a former chief information security officer at the VA who is now an analyst at Input in Reston, Va.

OMB officials "are assuming that there's a centralized authority that is part of the escalation process," Brody said. In reality, such a structure simply doesn't exist within most federal agencies, he added. When breaches occur in such situations, he asked, "who reports it, and at what level does the decision get made to pass the information on to the OMB?"

The new policy could also result in a high number of "false positives" being reported to the DHS, said Doug Howard, chief operating officer at Counterpane Internet Security Inc., a managed security services provider in Mountain View, Calif. Each time someone left a laptop in a car or at an airport security check-in, a report would have to be filed immediately, Howard noted. "It's just burdensome," he said.

The July 12 memo also requires agencies to specify the amounts they're requesting for correcting "steady-state" systems' security weaknesses, versus funds they're seeking for systems development or modernization projects.

The directive from Evans followed a memo from another OMB official last month that gave agencies 45 days to implement a prescribed set of security controls for protecting sensitive data when it is accessed from remote locations or stored on laptop PCs and other mobile devices.

In another development last week, the House Committee on Veterans' Affairs approved a bill that would elevate the VA's CIO and CISO to higher management levels within the agency. The Veterans Identity and Credit Security Act would also require the VA to provide timely notifications of breaches to Congress and evaluate the idea of using personal identification numbers instead of Social Security numbers to identify veterans. ▶

VA Drops Credit Offer After FBI Says Data Is Safe

THE U.S. DEPARTMENT of Veterans Affairs last week withdrew its offer to pay for one year's worth of credit-monitoring services for the 26.5 million veterans and active-duty personnel whose data was exposed in the security breach at the VA.

The decision to cancel the offer was made because of the "high degree" of confidence expressed by the FBI that the data hadn't been accessed or compromised, VA Secretary R. James Nicholson testified at a Senate committee hearing last Thursday.

The FBI, which recovered the stolen equipment on June 29, issued a final report to the VA on its evaluation of the data last week.

Nicholson said that instead of paying for credit-monitoring services, the VA will soon retain an identity risk management and fraud-monitoring company to track whether any of the data is being misused.

The credit-monitoring cost had been pegged at $160.5 million. Nicholson wouldn't specify what the VA expects to pay to monitor for fraud. But, he said, "it is surprisingly inexpensive."

NICHOLSON says he's confident data wasn't compromised

Tim O'Pry, chief technology officer at The Henssler Financial Group in Kennesaw, Ga., is one of the veterans whose personal data was exposed. O'Pry said it's important to know how and why the FBI and VA are so confident that the information wasn't compromised.

"At a minimum, they should have a reputable third party validate that claim," O'Pry said. "If it is accurate, then withdrawing the [credit-monitoring] offer is reasonable."

Doug Howard, chief operating officer at Counterpane Internet Security, said tools are available to help detect data tampering. But the fact that the disk containing the data was out of the VA's control for an extended period of time makes it very difficult to guarantee that no data was copied, Howard said.

– JAIKUMAR VIJAYAN

VA Official Who Penned Memos on Security to Quit

TIM McCLAIN, whose legal opinions played a key role in maintaining a decentralized approach to information security at the U.S. Department of Veterans Affairs, is leaving his job as the agency's general counsel effective Sept. 1.

A note posted on the VA's Web site last week said that McClain plans to return to the private sector. His departure follows the resignation late last month of Pedro Cadenas, who had been the VA's chief information security officer.

VA Secretary R. James Nicholson said in a statement that McClain "has been an integral part of [the] VA's senior leadership team."

Members of the Senate Committee on Veterans' Affairs also commended McClain for his contributions to the agency at last Thursday's hearing on the massive data breach at the VA.

But McClain has faced considerable criticism at other congressional hearings over what some have seen as his role in limiting the authority of the VA's CIO and CISO via a pair of internal memoranda written in August 2003 and April 2004.

In the first memo, McClain expressed the opinion that responsibility for IT security under the Federal Information Security Management Act (FISMA) rested not with the VA's central CIO but with executives in its health care, benefits and cemetery divisions.

Similarly, McClain stated in the second memo that the CIO had no authority at all under FISMA to enforce policies across the agency even though he had responsibility for ensuring information security.

Bruce Brody, who was the VA's CISO from 2001 to 2004, said in an interview this month that the memos were written after he asked McClain for opinions on security responsibilities at the agency. Brody contended that McClain's legal interpretations "fragmented security at the VA into little stovepipes and fiefdoms."

The agency's information security office was left with "no authority," Brody said. He noted that when the W32.Blaster worm struck in 2003, he had the power to patch only about 1,000 of the VA's 250,000 systems.

The VA's decentralized structure has been widely blamed as a contributing factor in its recent security breach, and Nicholson last month said he had issued a memo that more clearly delegated responsibility and authority for enforcing security policies and directives to the agency's CIO.

– JAIKUMAR VIJAYAN

Continued from page 1

Feds

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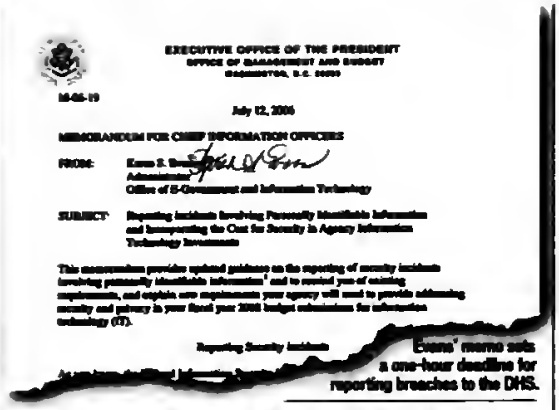

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July 12, 2006

MEMORANDUM FOR CHIEF INFORMATION OFFICERS

FROM: Karen S. Evans
Administrator
Office of E-Government and Information Technology

SUBJECT: Reporting Incidents Involving Personally Identifiable Information and Incorporating the Cost for Security in Agency Information Technology Investments

This memorandum provides updated guidance on the reporting of security incidents involving personally identifiable information and to remind you of existing requirements, and explains new requirements your agency will need to provide addressing security and privacy in your fiscal year 2008 budget submissions for information technology (IT).

Reporting Security Incidents

Evans' memo sets a one-hour deadline for reporting breaches to the DHS.

Open network access is good for business.

Open network access is bad for security.

GLOBAL DISPATCHES

An International IT News Digest

India Blocks Web Sites After Train Bombings

BANGALORE, INDIA

THE INDIAN government has ordered Internet service providers to shut off access to 17 Web sites and blogs in the aftermath of the July 11 bomb attacks that killed more than 200 people on commuter trains in Mumbai.

The national Department of Telecommunications (DOT) issued the order two days after the bombings, said Deepak Maheshwari, secretary of the Delhi-based Internet Service Providers Association of India. The DOT didn't specify why it wanted the URLs of the sites to be blocked, he said.

But according to sources, the government suspects that terrorists were using the targeted sites to communicate with one another.

Maheshwari said that some Internet service providers barred access to entire domains, such as Google Inc.'s *www.blogspot.com* site, instead of the subdomains that they were ordered to block. The ISP Association last week urged its members to remove the blanket blocks, he said.

Under India's Information Technology Act, Web sites can be blocked if they are found to be promoting hate, violence, terrorism or pornography.

However, the DOT's order drew criticism from many bloggers, who claimed that the government was attempting to subvert freedom on the Internet.

■ JOHN RIBEIRO, IDG NEWS SERVICE

Chip Design Lab Still Operating, Intel Says

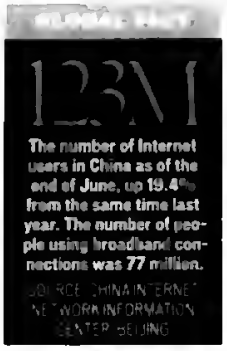
HAIFA, ISRAEL

INTEL CORP. last week said that operations at its processor design center here had yet to be disrupted by the rockets being fired into the port city as part of the escalating armed conflict between Israel and Hezbollah guerillas based in southern Lebanon.

The Haifa facility developed the Pentium M chip and is designing Intel's next-generation mobile processors. About 2,300 workers are based there, Intel Israel spokesman Kuby Bahar said.

In response to orders from the Israeli Home Front Command that Haifa residents stay inside bomb shelters, essential employees at the design center are working in protected areas of the facility, Bahar said. Other workers are telecommuting from bomb shelters near their homes, he said, adding that the shelters are equipped with wireless connections and that all of the center's employees have laptops.

■ SUMNER LEMON, IDG NEWS SERVICE


123M
The number of Internet users in China as of the end of June, up 19.4% from the same time last year. The number of people using broadband connections was 77 million.
SOURCE: CHINA INTERNET NETWORK INFORMATION CENTER, BEIJING

Police Agency Expands Efforts on Cybercrime

AUCKLAND, NEW ZEALAND

NEW ZEALAND'S national police force plans to set up a high-tech crime-reporting center in partnership with several other government agencies and to form a unit that will focus on fighting cybercrime.

Maarten Kleintjes, head of the New Zealand Police's electronic crime laboratory, said banks, credit card companies, telecommunications carriers and Internet service providers will also be involved in the crime-reporting center. The facility is scheduled to begin operations in December.

Kleintjes said the new cybercrime unit is being formed because his team of 12 officers at the electronic crime lab can't keep up with the increasing volume of work it faces. "This has to happen," he said.

■ ULRIKA HEDQUIST, COMPUTERWORLD NEW ZEALAND ONLINE

Compiled by Craig Stedman.

Briefly Noted

in Bangalore said it will offer a free electronic-waste disposal service to its PC customers starting in September. The service will cover all Wipro-branded PCs sold in India as an adjunct to the company's core outsourcing business. Greenpeace International had pressured Wipro to offer a PC disposal service.

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■ MICHAEL CRAWFORD, COMPUTERWORLD TODAY (AUSTRALIA)

Accenture CTO: Technology Takes Back Seat on SOAs

BY HEATHER HAVENSTEIN

Accenture Ltd. last week announced a $450 million service-oriented architecture initiative that includes building a new research laboratory and developing tailored SOA applications for specific industries.

The IT services firm said its SOA technology lab will initially focus on the health care industry through an e-prescription project that's aimed at integrating the various steps involved in filling a prescription. Don Rippert, Accenture's chief technology officer, spoke with Computerworld about the three-year SOA effort, which will be centered around model-driven development. Excerpts from the interview follow:

What's the philosophy behind the SOA initiative? SOA has to be led by the business process, not by the technology. You can change your application by changing the business processes as they are defined in a modeling tool without having to change the application code. The application software and then the [hardware] platform on which it runs are a means to an end. But like client-server or Net-centric [architectures], this is something that takes time to achieve at the full benefits level.

What do you see as the main role of the SOA laboratory that you're setting up? They're looking at application development approaches that we think will be mainstream in three to four years. They'll be writing a fourth-generation [health care] application in the labs where we bring together functionality that we expect to see a doctor, a pharmacy and an insurer using ... and come up with solutions to [address] those problems.

How do I get past the data access problems and the service definition problems? I need a more flexible approach to data access that doesn't need to be optimized transaction by transaction. We will then use what we learn to guide the rest of Accenture.

Why did you decide to focus first on the health care industry? The costs are very high industry-wide for medical services, and it involves multiple independent organizations. No one company prescribes medicine, dispenses it and pays for it.

We wanted an environment where there are multiple different companies with multiple different platforms that had to come together to improve a business process.

I wanted something that people could pretty quickly understand functionally. Pretty much everyone has gotten a prescription. I don't have to spend a lot of time describing what it is and how you get it.

What are some of the cultural challenges for IT managers associated with this type of shift in application development? Just like the CIO is in charge of the corporate data model now, in the future that same CIO will be in charge of the corporate process model to make sure that changes to process *x* don't inadvertently negatively affect process *y*.

The CIOs in all companies that move to SOA will have to bulk up on people with process knowledge. It's probably the biggest governance issue we see. ▶

CONDUCTING IT

Accenture CIO Frank Modruson offers some tips for orchestrating IT business alignment. **Page 38**

GLOBAL

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CONDUCTING IT

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Microsoft, Nortel Team on Unified Communications

BY MATT HAMBLEN

Microsoft Corp. and Nortel Networks Corp. last week announced a broad agreement to develop and market unified communications technology, saying that their Innovative Communications Alliance should begin releasing products next year as part of a road map laid out by Microsoft in June.

At that time, Microsoft said it would team up with vendors such as Hewlett-Packard Co., Motorola Inc. and Siemens AG on unified communications initiatives. But Microsoft and Nortel detailed a more expansive set of plans, including the eventual development by Nortel of a full suite of networking hardware and software that can work with Office.

Nortel CEO Mike Zafirovski predicted during a jointly held teleconference that the alliance will generate about $1 billion in added revenue for the struggling company over the next few years.

Mixed Reaction

But Nortel users were mixed on whether they think the deal with Microsoft will give the Brampton, Ontario-based vendor a big boost in its efforts to rebound from a series of losses, financial restatements and management changes.

Victor Bohnert, executive director of International Nortel Networks Users Association Inc. (INNUA) in Chicago, said the alliance should help Nortel re-establish its reputation as a market leader. "This represents two powerhouses coming together, and I don't think there's too much of a downside to it," he said.

A Microsoft and Nortel collaboration will be a good thing for IT shops if it enables them to do less software integration in-house, said Jason Delp, president of the Pittsburgh-Western Allegheny Meridian Users Group, which is aligned with INNUA.

Delp is on the IT staff at Coventry Health Care Inc., a managed care provider and insurer in Bethesda, Md., that uses Windows, Microsoft's Office Communicator software and a Nortel network. "There's always the possibility that some Nortel users who are Microsoft haters won't like this alliance," he said. "But you have to face it that from the corporate perspective, the trend is toward Microsoft applications."

Nonetheless, Delp said he isn't convinced that working with Microsoft will help Nortel much. "After all its problems, Nortel is still in business, but who knows for how long," he said. "They still have an uphill battle.

"I wouldn't say that I would drink the Microsoft Kool-Aid just because we have Nortel already," said Andy Rebar, an IT staffer at Fujifilm Sericol USA Inc. in Kansas City, Kan. "We'd have to look at the benefits and weigh the ins and outs." Rebar is president of INNUA's Heart of America chapter.

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> **JASON DELP,** PRESIDENT, PITTSBURGH-WESTERN ALLEGHENY MERIDIAN USERS GROUP

Bill Lesieur, an analyst at Technology Business Research Inc. in Hampton, N.H., said Microsoft and Nortel "will be pitted against the well-established Cisco-IBM duo in delivering IP telephony and unified communications."

The open question is how well Microsoft and Nortel will work together, said Forrester Research Inc. analyst Rob Whiteley. "It needs to be a fluid operation," he said, "or their customers will go to Cisco." ▸

software
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DON TENNANT

Leaders and Followers

AT THIS WRITING, I'm contemplating what I'll say in accepting the American Society of Business Publication Editors 2006 Magazine of the Year award, which *Computerworld* will have received by the time you read this. Actually, I know what I want to say. I just have to figure out how to say it.

What I want to convey is the same message that was expressed so eloquently last month by Hector Ruiz, CEO of Advanced Micro Devices, when he accepted the 2006 Morgan Stanley Leadership Award for Global Commerce. Ruiz, who received the award at the *Computerworld* Honors event in Washington, provided a captivating glimpse into the corporate culture at AMD.

"I am delighted to be part of a company that is made up of thousands of people who not only come to work to earn a living — they come to work to change the world," he said. "And I'm thrilled to be able to be their leader and follow them."

I could really identify with what Ruiz said about being in a leadership position and doing the following. *Computerworld* is produced by an extraordinarily talented, dedicated group of individuals. I learn from them, I'm inspired by them, I'm uplifted by them. They make me determined to try to work even harder than they do, which is a task that's nearly impossible to accomplish. So, yes, I know exactly what Ruiz meant. And that's what I'll try to convey when I accept the Magazine of the Year award on behalf of the people who earned it.

But back to that part about wanting to change the world. In his remarks, Ruiz spoke of how that desire drives the 10,000 AMD employees he represents.

What AMD wants to do, he said, is work with other companies to "make [technology] accessible to everyone in the world, regardless of income, regardless of position, regardless of where they live." Realizing that desire would mean "we could truly make the world a better place," Ruiz said.

There was a conviction and sincerity in Ruiz's remarks that stuck with me, and that I recalled earlier this month when I read about the progress being made by Nicholas Negroponte's One Laptop Per Child initiative to produce a $100 laptop for children in developing countries. It didn't surprise me when I learned that AMD is participating in the OLPC project — or that Intel, the Goliath to AMD's David, is not.

I couldn't help but recall Ruiz's comments again last week when I read about Intel's ongoing reorganization and layoffs, as it struggles to deal with sliding profits and loss of market share to AMD. Donald MacDonald, vice president of corporate brands and marketing, captured his company's corporate culture in remarks to the IDG News Service.

"We had become bloated. It's like middle-age spread," MacDonald said, patting his belly. "You don't know how it happens, but one day you look down and it's there."

It's an interesting simile, considering that "middle-age spread" is a blessing that most of the world's population can only dream about.

Being fat and happy makes it easy to forget some things. Intel is boasting about its five-year, $1 billion initiative to promote the use of computers in developing countries, with a $400 laptop serving as the program's hallmark. It appears no one at Intel realizes that $400 is still far too unaffordable to do any real good.

Intel is a leader that's been doing a lot of following of late. But in this case, being a leader that follows isn't all that compelling. ▮

Don Tennant

DAVID MOSCHELLA

Gates Knows When to Fold Them

THE NEWS that Bill Gates plans to cease being a full-time Microsoft employee in July 2008 was anything but surprising. It's been apparent for some time that Microsoft's founder and chairman (a title he will retain) is more energized by the work of the Bill & Melinda Gates Foundation than by the day-to-day churn of the software business. Taking on the world's many inequities and diseases has clearly emerged as a higher calling for a man whose single-minded focus has often been the key to his success.

An additional clue to Gates' thinking might be his early love of poker. Although he is almost always portrayed as the classic software nerd, Gates is really more about winning than technology, believing that a truly great executive, like a great poker player, will eventually get the edge no matter what cards he is dealt. Poker also teaches us a much more famous lesson: Know when to hold them and when to fold them.

Gates has decided to get out of the software game much earlier than most players would. To help see why, consider the overall arc of Microsoft's fortunes as summarized below:

- Harvard junior Gates drops out of school to pursue the potential of microcomputers.
- Everybody loves the underdog, as Gates outwits his rivals and IBM to control MS-DOS.
- David defeats Goliath, as Microsoft fends off IBM's OS/2 counterattack.
- Microsoft's monopoly is consolidated through the success of Windows and Office.
- Wintel heads into the enterprise, as Novell is crushed and NT is established.

- Tyrannosaurus Gates destroys Netscape and dominates the browser business.
- With visions of grandeur, Microsoft invests in MSNBC, Teledesic, Cox, Slate and so on.
- The inevitable and debilitating antitrust suits in both the U.S. and Europe begin.
- Microsoft faces increasing bureaucratization and the loss of new markets to Google, eBay, Yahoo, etc.
- There is danger on all fronts — open-source, software as a service, advertising, cell phones, etc.

As the last two items make clear, the Microsoft story is far from over. Windows and its successors might remain the underlying platform for home, school and enterprise applications, with Microsoft raking in vast profits for literally decades. On the other hand, open-source and online services could reign, with Microsoft becoming just another large base of legacy code.

Given the potentially major battles ahead, one wonders whether Gates will really be able to stay on the sidelines, especially if his baby gets in trouble. Like athletes, many CEOs have announced their retirements and then changed their minds.

But perhaps Gates' poker instincts say that the odds are increasingly stacked against him and now is the best time to leave this particular game. After all, his old chum Scott McNealy has already stopped playing and probably wishes he had done so sooner. Even Larry Ellison doesn't seem to be having as much fun as he used to.

At various times, Gates has been underestimated, loved, admired, feared, hated and even deemed irrelevant. Now, it's time for him to find a new game. As it happens, the one he has chosen is big enough to challenge both his and Warren Buffett's wallets.

One of the great ironies of modern capitalism is that most people instinctively believe that monopolies are bad for society and are therefore best eliminated. But without them, where would we get the surplus wealth that funds the great private libraries, museums, foundations, parks, and cultural and scientific institutions that take us beyond our workaday lives?

Let's hope that Gates uses the operating systems and applications money we have all given him over the past 25 years to do something truly great. In this grander, more important game, we should be rooting for him to win once again.

WANT OUR OPINION?

More columnists and links to archives of previous columns are on our Web site:
www.computerworld.com/columns

READERS' LETTERS

The Real Scoop on Security of E-voting

I AM THE principal investigator for a report called "The Machinery of Democracy: Protecting Elections in an Electronic World," published by the Brennan Center for Justice at New York University School of Law. In the otherwise excellent article "Concerns About Fraud Potential Continue to Plague Users of Electronic Voting Machines" [News, July 3], Marc L. Songini quotes professor Michael Shamos as stating that a "fundamental premise" of our study is that it is "easy to rig a machine to throw an election."

However, this was not the premise of our study. Rather, a result of our analysis was that it is, if not easy, very practical to use Trojan horse attack methods to manipulate the results of an election, given the current technology and security processes used in most jurisdictions around the country. Just as importantly, our study shows that there are straightforward and effective means to defend against such threats.

Our study was conducted by some of the most knowledgeable and respected individuals in the world of information security and voting technology, including the scientists who developed drafts of voting system standards for the U.S. government. Our conclusions were reached after a year of detailed analysis. They were then vetted by a wide variety of industry experts.

In our report, we covered in some detail how an attacker could develop a Trojan horse, insert it into the voting machine, elude detection during inspection and testing, and control it so that vote totals were changed on Election Day.

Shamos has previously implied that there is some step that requires omniscient abilities to accomplish this type of attack; after a year of study, it is clear that no such step exists.

Our research shows that it would be quite practical to hide an effective Trojan horse inside a modern voting machine. Merely switching a very small number of votes on a large percentage of voting machines would be enough to swing many close statewide elections.

The statisticians and social scientists we worked with concluded that it would not be possible to detect such a broad attack merely by reviewing precinct totals.

In other words, no omniscient abilities would be needed to make the results of such an attack plausible to those reviewing the numbers after Election Day.

Eric Lazarus
New York

Unfortunate Juxtaposition

IN MY e-commerce classes, we talk extensively about the dominance of Google in keyword advertising. While its success is viewed favorably in most sectors, its efficiency is based on the programmed selection of ads to be inserted on appropriate pages. An unforeseen effect of such low-cost automated systems is that they occasionally give unintended results.

Recently, there was a news story about a man who threw his two children and himself off a 15th-floor balcony of a swanky South Beach hotel. The Google ads enticed future customers with discount rates at that hotel from Expedia and another discount broker.

Richard N. Bialac
Professor of IS,
Milledgeville, Ga.,
rick.bialac@gcsu.edu

H-1B Visa Program Isn't Market-based

IT SHOULD be noted that the H-1B program is not remotely labor-market-based and gives corporations nearly complete control of the immigration of skilled people ["Senate Immigration Bill Raises H-1B Limit," *Computerworld.com*, May 30]. If the program were market-based, prospective workers would get the visas at a U.S. consulate, and U.S. citizens and green-card holders would compete. Instead, the program provides hundreds of thousands of indentured, mostly average, workers at low rates.

In fact, the increase should cover most of the new programmers needed in the U.S. annually. U.S. citizens and residents then rationally drop computer science and other tech majors. The result is a likely downward spiral in U.S. tech capacity and national development as the exodus penetrates further into engineering and science.

Work visas have brought many excellent tech people to the U.S., but the program wasn't intended to "undevelop" the country. Companies need to be removed from the visa process; it needs to be market-based, not lobbyist-based; and it needs to be more modest and consistent than the new bill.

Hugh F. Bonney
System designer,
Mountain View, Calif.

Everybody Needs A Little Downtime

I ENJOYED BARBARA Gomolski's column about the chaos of multitasking ["Are We Multitasking Ourselves Into Chaos?" Management, May 22]. However, she didn't mention some of the forces driving this phenomenon.

Many companies expect their people to be available all the time. In this, life imitates computation, as management expects humans to be up 24/7. This means every minute, from the boardroom to the bedroom to the bathroom, employees are also under more and more time pressure. They feel that they need to maximize every minute to meet their impossible deadlines and responsibilities.

These two drivers lead to multitasking, which destroys flow and robs time for contemplation. Destroying flow makes people feel more fragmented. Robbing ourselves of contemplation means that we settle for a sufficient, but not good, solution because we don't think about problems thoroughly.

I think that the answer to these problems is to just say no. Don't let yourself multitask. If your employers expect it, warn them of the consequences.

If enough people fight the fragmentation that pervades today's IT world, that world will change and lead to better productivity and happiness for all.

Bill Barbour
Auburn Hills, Mich.

ONE IMPERFECTION of on-demand, 24/7 communications is the notion that responses will be well informed as well as instantaneous. Whatever happened to think time? Extreme multitasking has a downside. Risks to quality, thoughtfulness and creativity are apparent; theft of personal time and space are less so. And while I've been accused of having Luddite tendencies, I've never been accused of lack of focus.

Sharon Hax
Charleston, S.C.,
SharonHax@aol.com

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 1 Speen Street, Framingham, Mass. 01701. Fax: (508) 879-4843. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

Q&A
Data: Back From the Dead
What happens when you send that failed disk drive off to recovery specialists? Experts at Ontrack Data Recovery provide a look into what they do. **PAGE 24**

SECURITY MANAGER'S JOURNAL
'By the Way, We Have an Acquisition in Progress'
Mathias Thurman has to scramble upon learning that a deal to acquire a smaller company will be signed soon. **PAGE 28**

QUICKSTUDY
The Singularity
Futurists like Ray Kurzweil describe a point in time when technical progress may allow machine and human intelligence to merge in what they call the Singularity. **PAGE 30**

E-MAIL MANAGEMENT

Special Delivery

With e-mail becoming a mission-critical application and the volume and size of messages exploding, IT is scrambling to monitor and improve the systems that keep the mail flowing. By Sue Hildreth

As any e-mail administrator will tell you, managing the content of the constant flood of incoming and outgoing messages is only half the battle. The sheer volume of e-mail, coupled with the increasing size of files that users want to send, also puts a staggering load on the network and servers. At the same time, end users are resisting attempts to limit the size of their in-boxes, demanding the right to stash gigabytes of mail and attachments on the server. IT clearly needs a strategy to manage the e-mail flood.

The first step is deploying a good e-mail monitoring and reporting tool, advises Scott Buelfel, messaging administrator at Con-way Inc., a $3.7 billion provider of global supply chain services based in San Mateo, Calif. He persuaded management to let him buy Quest Software Inc.'s Spotlight on Exchange and MessageStats reporting and monitoring tools when e-mail performance problems kept cropping up and he couldn't pinpoint the problem with his existing tools.

"In the past, if we had a lot of message traffic on a particular day and management wanted to know where it was coming from and why, I'd have to say, 'I can't tell you. I don't have the tools to identify it,' " says Buelfel, noting that native message-tracking utilities are only useful for diagnosing problems with a single e-mail.

Spotlight monitors e-mail services and provides information on things such as available storage and the size of the routing queue. MessageStats enables Buelfel to run reports on a range of usage statistics.

"We use it for all manner of reporting, based on traffic, volume, growth, forecasting," says Buelfel.

According The Radicati Group Inc., the average corporate e-mail user sends and receives a total of 133 messages, or about 16.4MB of data, per day. IDC estimates that the size of business e-mail sent annually worldwide

Continued on page 22

IBM.

_INFRASTRUCTURE LOG

_DAY 33: Our information is siloed. Unmanageable. People can't access the latest info to make decisions. Gil's resorted to giving everyone access to everything all at once.

_Monitors now outnumber humans 18 to 1.

_DAY 36: It's clear to me. We need an IBM Information On Demand middleware solution. Info will be liberated from the silos—available when we need it, whatever the format. Accurate and in context. Now we can make smarter decisions and deliver real business value.

_Access is a beautiful thing.

Information Management

See innovative IBM Info Management solutions in action:
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Continued from page 20

wide will exceed 3.5 exabytes (3.5 billion gigabytes) this year, double the amount of two years ago.

The need for organizations to implement e-mail management software — specifically, monitoring, reporting and archiving tools — will become more urgent, say experts, as the volume of mail puts greater stress on storage and bandwidth resources.

"The growth in e-mail has been steady and huge, to the point that everybody is having major storage and performance problems," says David Via, an analyst at Ferris Research in San Francisco.

And because users rely so heavily on their e-mail these days, they tend not to tolerate delays in message delivery. "People expect the messages to go from here to there in a matter of seconds. They don't care how many messages, or what the architecture is like," says Bueffel. "They just expect that when they click Send, it should be there."

Monitoring for Bottlenecks

Although e-mail servers such as Exchange come equipped with utilities, they often can't provide the depth or breadth of information that e-mail managers need in order to diagnose — and anticipate — problems.

"Using the native message tracking [in Exchange], I could see where some of the e-mail was going, but I wasn't able to isolate where it was coming from," says Bueffel. "We needed a more general reporting tool."

Henry Yiin, manager of systems engineering at IXIS Capital Markets North America Inc. in New York, relies on Network Physics Inc.'s NP-2000 appliance to monitor traffic volume across the network and to and from the Exchange server. That has helped him pinpoint the source of problems — whether it's the network, Exchange or some other application — fairly rapidly.

But monitoring e-mail storage has been more of a challenge. Yiin is using a homegrown Perl script to check storage levels on the Exchange server and associated SAN devices every 10 minutes. The Exchange server can, however, suddenly outstrip its available disk space and crash. "If storage gets to 99% capacity, the residing data stores shut down. That can happen in just a couple of minutes," Yiin says.

Since having the Perl script run more frequently would consume too much CPU time, Yiin is looking for a commercial e-mail monitoring and reporting tool to replace it. "We want both real-time monitoring of the SAN status and good reporting," he says.

Sara Radicati, CEO of The Radicati Group, says she believes the market is ripe for better tools to configure, monitor and plan e-mail systems. "That whole area has a lot of growth potential ahead," she says. "People need a lot of intelligence on performance, capacity planning, pinpointing potential problems before they occur."

To make it easier for IT to spot problems quickly, vendors are adding visual features such as graphics of the network and e-mail traffic flows, she adds.

For example, Con-way's Bueffel uses the Topology Viewer feature in Spotlight on Exchange. Data collected by Spotlight — such as the SMTP and MAPI connections, the available storage, and response time of the mailbox store — is displayed in both a diagnostic console and graphical topology viewer. "You can see where there is a bottleneck," says Bueffel. He uses the MessageStats reporting tool to help him identify trends and forecast Con-way's future Exchange capacity needs. The reporting and modeling capabilities also help him stay ahead of demand, Bueffel says.

University Health System Inc. (UHS) in Knoxville, Tenn., employs DYS Analytics Inc.'s Control to manage its Exchange servers and diagnose problems with e-mail delivery or configuration issues. UHS also uses Argent Software Inc.'s Guardian database monitoring product to watch for bottlenecks in the e-mail databases and queues.

"If the server stops, it will restart it for me or page me for other problems. It's like having an extra employee keeping an eye on things," says systems manager Jerry Hook.

Managing the Volume

To help reduce the load on the e-mail server, many companies move older messages and attachments off of it and onto a separate network server. E-mail archiving tools can make it easy for users to access archived e-mail alongside their current in-boxes.

Nino Silvano, CIO of Argix Direct Inc., a logistics service provider for the retail industry, uses EMC Corp.'s EmailXtender software to move e-mail that is more than 30 days old to an archive that users can search. By offloading the messages from the Exchange server, users can be allotted more room for current mail — up to 2GB per mailbox, though few ever need that much, says Silvano.

"We had a 180GB message store that we brought down to 30GB," he notes.

At UHS, e-mail archiving on the Veritas Enterprise Vault has made a big difference in performance. "It keeps my e-mail databases slim so they're running fast," says Hook.

He also saves space by using the DYS Control administrative software, which helps with housekeeping tasks such as cleaning out unused mailboxes. With 4,200 employees — and frequent turnover for some positions — abandoned mailboxes can use a lot of space.

"This gave me the reports I was looking for to isolate the mailboxes that needed to be deleted. There were about 1,000 of them," says Hook.

He also recommends configuring e-mail servers to reduce traffic. UHS uses Control to identify the departments and users that exchange the highest volumes of e-mail. Hook then locates those mailboxes on the same Exchange server. "That way, the mail isn't always going over your network," says Hook. The strategy also helps when the mail contains large attachments, like graphics files and PowerPoint presentations.

Large attachments have been a problem for Ray Martin, the IS technical manager at Monrovia Nursery Co. in Azusa, Calif. "We have had some PowerPoint presentations of 120MB that go out to a dozen people, and all the other outbound e-mail backs up behind them," says Martin. "We've attempted to restrict the attachment sizes, but the limits just keep going up."

Shared file spaces and FTP sites are an obvious solution. But it's often very difficult to persuade employees to use those options, when clicking "attach" in their e-mail clients is so easy to do. So Martin has turned to TrafficShaper, a tool from Packeteer Inc. that's designed to ensure that big attachments don't block the network.

Traffic prioritization tools recognize different types of IP traffic and allot different amounts of bandwidth to each, based on organizational policies. Some time-sensitive services, such as voice over IP or virtual private networking, might guarantee that a small amount of bandwidth is always available.

"We don't want huge attachments blocking customer traffic from our Web site or employee VPN traffic from our remote locations," says Martin. "This gives us guaranteed quality of service and helps to juggle all the priorities."

Hildreth is a freelance writer based in Waltham, Mass. She can be reached at Sue.Hildreth@comcast.net.

Going to Plan B: The Backup

THE SERVER CRASHES, the power goes out, or some other minor or major disaster occurs, and your organization's e-mail system is down. That's when you need a Plan B. In these cases, two critical concerns are getting the e-mail system running again and saving as much data as possible. A regular (and tested) backup of the e-mail server and an off-site standby server or mail service is considered essential these days.

For instance, supply chain services provider Con-way has a multiserver standby in an off-site location for all of its Windows applications, including Exchange. Daily and weekly tape backups are sent to the off-site location.

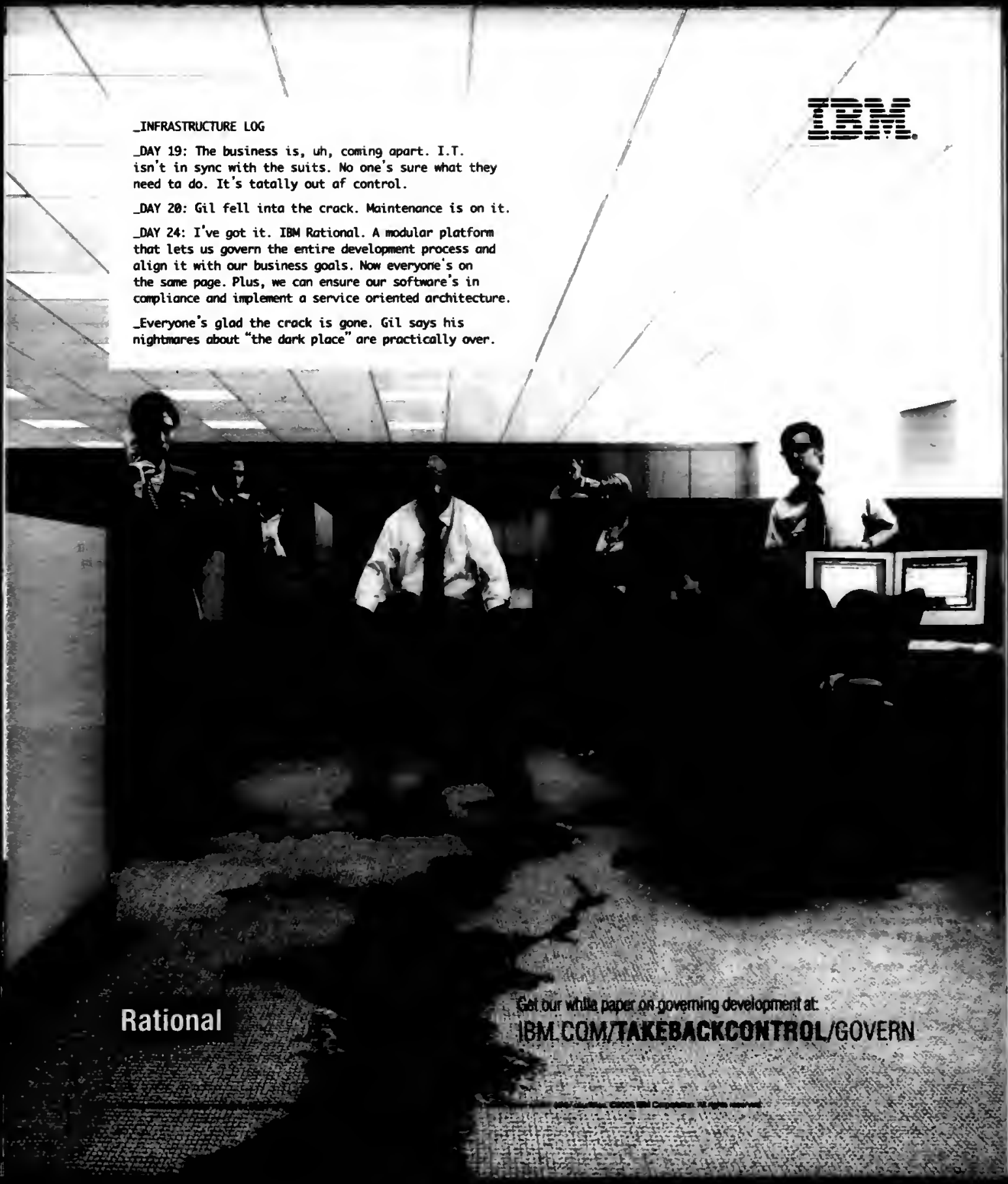
"Our main data center is in [Oregon], but our off-site provider is on the East Coast. So we can get a dial tone of mailbox functionality running immediately to start sending and receiving e-mail, followed by a tape restore," says Scott Bueffel, messaging administrator at Con-way.

Logistics company Argix Direct archives e-mail over 30 days old on tape and does a nightly backup of the complete Exchange data store on ATA disk. Both are then copied and moved off-site. In the event of a disaster, the current mail store would be restored first.

"After this was completed, we would restore the archive, which would be considerably larger and therefore take longer, but Exchange would be up and available while this was running," says CIO Nino Silvano. "If the disaster did not affect the SAN where the backups are stored, we would be able to back up everything from disk immediately."

– SUE HILDRETH

> Our main data center is in [Oregon], but our off-site provider is on the East Coast
>
> SCOTT BUEFFEL


_INFRASTRUCTURE LOG
_DAY 19: The business is, uh, coming apart. I.T. isn't in sync with the suits. No one's sure what they need ta do. It's tatally out af control.
_DAY 20: Gil fell inta the crack. Maintenance is on it.
_DAY 24: I've got it. IBM Rational. A modular platform that lets us govern the entire development process and align it with our business goals. Now everyone's on the same page. Plus, we can ensure our software's in compliance and implement a service oriented architecture.
_Everyone's glad the crack is gone. Gil says his nightmares about "the dark place" are practically over.
IBM
Rational
Get our white paper on governing development at:
IBM.COM/TAKEBACKCONTROL/GOVERN
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DATA: Back FROM THE Dead

Data recovery specialists describe how their methods match the changing needs of their customers.

Q&A

The urgent need to recover digital data after disasters like hard drive failures and power outages has remained largely unaltered since companies entered the Electronic Age. What has changed is the greater complexity of the devices that fail and their increased media capacity, according to specialists from Ontrack Data Recovery. Computerworld's Robert L. Mitchell spoke with **Todd Johnson**, *vice president of operations, and* **Mike Burmeister**, *director of engineering for data recovery, about how data recovery has changed and what users can do to avoid having to call Ontrack in the first place.*

How are the technical challenges of recovering data different today?

BURMEISTER: Ten to 15 years ago, you could solve many drive failures with simple procedures that could be summarized as mechanical in nature. Today, we deal with the same mechanical problems, but they are much more difficult because of . . . the smaller drives and increased media capacity. On top of the mechanical problems, today there is an array of electronic failure scenarios that are very complex and require high-level engineering skills to solve.

JOHNSON: Things like the Exchange databases, the SQL database recoveries, are relatively new, and it's much more challenging from a computer science perspective to solve.

How have your recovery techniques changed?

JOHNSON: Many techniques are the same, with little changes or adjustments. But there are also many new techniques developed to address the difficulties of electronics failures and various forms of data corruptions that leave drives in a completely dead state.

Are most problems hardware- or software-related?

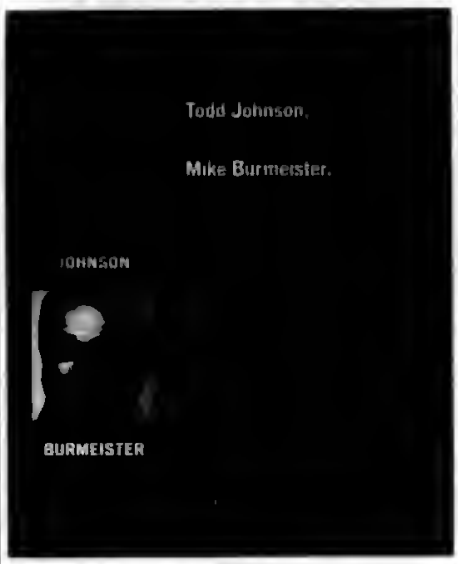
BURMEISTER: Both. It can be multiple things going on, where more than one hard drive failed in a RAID system. That is something we see on a regular basis. It can be things like a RAID controller failing. The drives may be working, but there's no intelligence anymore that knows how that bank was put together. The third thing is what we refer to as human-error problems. When there are drive failures . . . the process is to swap out the bad drive. People pull out the wrong drive by accident and get the drives in the wrong order, which results in a scrambling of data.

If my server hard disk crashes, wouldn't I be better off recovering from tape than paying a premium to recover data from the failed disks?

BURMEISTER: We've done a lot of work on server recoveries where we can rebuild a system faster than [IT] can restore a tape. A day of being behind with data [can be] worth millions of dollars.

What is it going to cost me to get that data back?

JOHNSON: Our average recovery is around $1,000. We do it in a two-step process. When we receive a drive or server, we do a first-step evaluation, which is typically around $100. Within 24 to 48 hours, we are able to provide a complete report on their situation and let them know what's recoverable and what's not. The entire turnaround time is three to five days.



What is your success rate?

JOHNSON: We can recover data from almost every device we get in. We could recover 99% of the data, and if we're not able to recover that one file, it's unsuccessful.

BURMEISTER: Take aside drives that are physically damaged, and we're close to 100% able to recover data. After Hurricane Katrina, we received hundreds of what we call flood jobs. Even there, we are close to 70% to 75% successful. Drives that have been in fires, drives that were intentionally thrown around by customers . . . pretty severe things can happen, and we can still get at it if the media is more or less intact.

What are the most common failures you see?

BURMEISTER: In general, moving parts and moving laptops don't go together well. If you're using a laptop, try not to move it around while it's actually running.

JOHNSON: Between 60% and 70% of the drives we receive have to go into the clean room, which means they are having physical problems. To avoid that, we talk about backing up, but one of the things that's most commonly missed is verifying that backups work. We get calls all the time from customers who say, "When I went to my backup, it didn't back up the right volume," or "The tape drive wasn't working."

How successful are you at recovering from tape?

BURMEISTER: A lot of those are one- or two-read errors, and we can usually recover that without much difficulty. The others are human errors, when people accidentally erase the tape. These are more complex and difficult. Formatting the wrong tapes is the most common [problem] by far. The other one is they back up over a tape that has information on it. The general thing is, they back up the wrong data.

When is a problem beyond the scope of the self-service tools, and how do users know when to use them and when not to?

BURMEISTER: With the EasyRecovery software that we sell, we go to great lengths to make sure we don't provide something that will potentially make matters worse. We see problems coming into the labs every day where if the customer hadn't taken that last step, we could have gotten their data back. We don't change what's on the media. We try to extract the data onto new media.

JOHNSON: If the data is really critical and if the user isn't technically savvy enough to use the software, they should contact a recovery service. If a drive is physically failing and you run a lot of diagnostic utilities, you can do damage.

What is the most difficult type of failure to recover?

JOHNSON: Hard drives that were in a hurricane or flood oftentimes are the most challenging, time-consuming and costly. The drives are generally sealed, but they definitely get wet inside. Just as bad is when they get out the water [and] they get dry again. We're still getting drives from people recovering from the hurricane. These are drives that have had buildings fall on top of them, have been submerged in mud. Users say, "I'll dry it out and fire it up." When that happens, the heads get affixed to the platters.

What advice can you give an IT manager who is facing potential data loss?

JOHNSON: Too often, we see them assuming that all is lost and that there is no hope. Oftentimes, we're contacted at the executive level because IT has said all is lost. In the vast majority of cases, we can help, if not 100%, to some degree.

BURMEISTER: When you do decide to look for a supplier, do your homework and ask a lot of questions. Make sure you ask for a quote for the worst case and best case in writing before you send it anywhere. ●

IBM.
_INFRASTRUCTURE LOG
_DAY 18: Everything is frozen. It's our processes. They're inflexible. We can't respond to change.
_Why did we lock ourselves in like this? Brrrr.
_DAY 19: The answer: IBM WebSphere middleware for Business Process Management. It lets us streamline business tasks. We can test our processes before we roll them out and monitar performance once they're deployed, and reuse is easy because it's based on a service oriented architecture.
_Everything's unfrozen now. Wow, it's good to feel my toes again.
WebSphere
Take the BPM with SOA
IBM.COM/TAKEBACK

Geek's Garden

A STROLL THROUGH THE TECHNOLOGY LANDSCAPE

STRESS MANAGEMENT:
X-rays Reveal Defects in Semiconductors

A SENSITIVE X-ray diffraction imaging technique developed by researchers at the National Institute of Standards and Technology (NIST) can help manufacturers avoid the bunching up of crystal defects caused by the manufacturing process for strained-silicon films.

Strained silicon is a new material under rapid development for building transistors. Introducing a slight tensile strain in the lattice of the silicon crystal dramatically improves the mobility of charges in the crystal, enabling faster, higher-performance devices. The strain is achieved by growing a relatively thick crystalline layer of silicon-germanium (SiGe) on the normal silicon substrate wafer and then growing a thin film of pure silicon on top. The difference in lattice spacing between pure silicon and SiGe creates the desired strain, but it also creates occasional defects in the crystal that degrade performance. The problem is particularly bad when the defects cluster in so-called pileups.

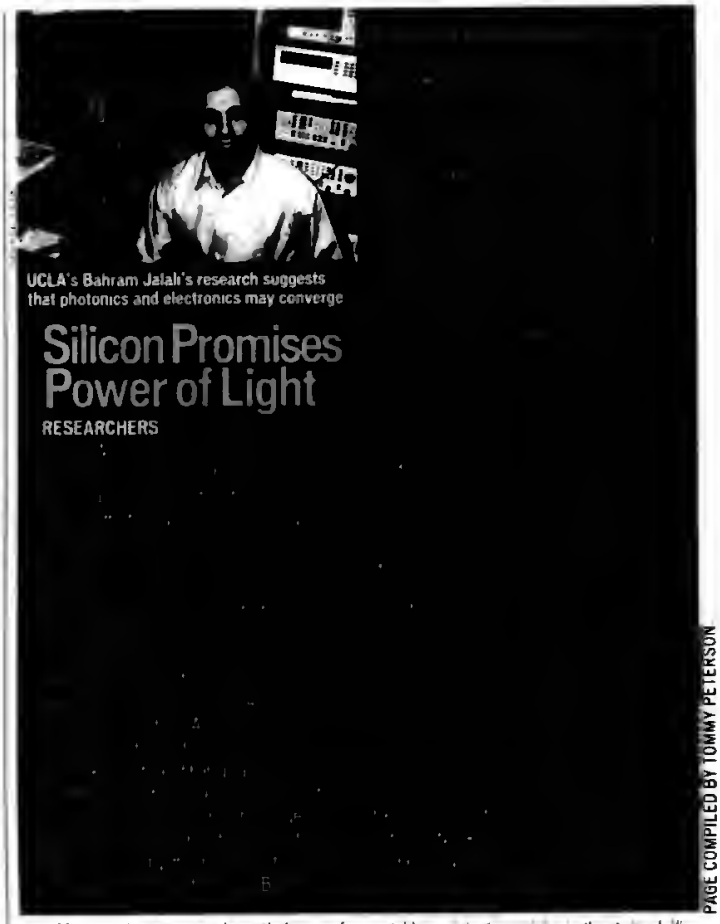
Topographs of three strata of a strained-silicon wafer

One of the best methods for studying crystal defects is to observe the image of X-rays diffracted from the crystal planes, a technique called X-ray topography. Until now, however, it's been impossible to study the interaction of dfects in the multiple layers of these complex Si-SiGe-Si wafers.

In a recent paper in *Applied Physics Letters*, researchers from NIST and AmberWave Systems Corp. describe a high-resolution form of X-ray topography that can distinguish individual crystal defects layer by layer. The technique combines an extremely low-angle incident X-ray beam (called a "glancing incidence") to increase the signal from one layer over another with the use of highly monochromatic X-rays tuned to separate the contributions from each of the layers based on their different lattice spacings.

Their results show that crystal defects created at the interface between the silicon wafer and the SiGe layer become "templates" that propagate through that layer and create matching defects in the strained-silicon top layer. These defects are notably persistent, remaining in the strained silicon even through later processing that includes stripping the layer off, bonding it to an oxidized silicon wafer and annealing it to create strained-silicon-on-insulator, or SSOI, substrates.

The research was performed at Argonne National Laboratory's Advanced Photon Source and supported in part by the U.S. Department of Energy.



UCLA's Bahram Jalali's research suggests that photonics and electronics may converge

Silicon Promises Power of Light

RESEARCHERS

PAGE COMPILED BY TOMMY PETERSON

DIFFERENCE ENGINES

It's All Relational

THE BROADEST DEFINITION of a database would be any organized collection of information and would therefore include your local lending library. More specifically and commonly, a database is a collection of electronic records stored in a computer and organized in such a way that the records can be accessed by software.

The first database management systems were developed in the 1960s. Charles Bachman was a pioneer in the field. His early papers show that his aim was to make more effective use of the new direct-access storage devices becoming available. Until then, data processing had been based on punched cards and magnetic tape, so serial processing was the dominant activity. Two key data models arose at this time: The Conference of Data Systems Languages (CodasyI) developed the network model based on Bachman's ideas, and the hierarchical model was used in a system developed by North American Rockwell and later adopted by IBM as the cornerstone of its Information Management System (IMS) product.

The relational model was proposed by E.F. Codd in 1970. He criticized existing models for confusing the abstract description of information structure with descriptions of physical access mechanisms. While Codasyl systems and IMS were conceived as practical engineering solutions taking account of the technology as it existed at the time, the relational model took a much more theoretical perspective, assuming that hardware and software technology would catch up in time.

E.F. Codd

Among the first research prototypes were Michael Stonebraker's Ingres at the University of California, Berkeley, and the System R project at IBM, announced in 1976. The first commercial products, Oracle and DB2, did not appear until around 1980. The first successful database product for microcomputers was dBase for the CP/M and PC-DOS/MS-DOS operating systems.

During the 1980s, research activity focused on distributed database systems and database machines, but these developments have had little general impact. Another important theoretical idea was the functional data model, but apart from some specialized applications in genetics, molecular biology and fraud investigation, the world took little notice.

In the 1990s, attention shifted to object-oriented databases. These had success in fields that needed to handle more complex data than relational systems could easily cope with, such as spatial, engineering and multimedia data.

Today, the fashionable area for innovation is the XML database. XML databases aim to remove the traditional divide between documents and data, allowing all of an organization's information resources to be held in one place, whether they are highly structured or not.

Geek's Garden

A STROLL THROUGH THE TECHNOLOGY LANDSCAPE

STRESS MANAGEMENT: X-rays Reveal Defects in Semiconductors

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SOURCE: NIST

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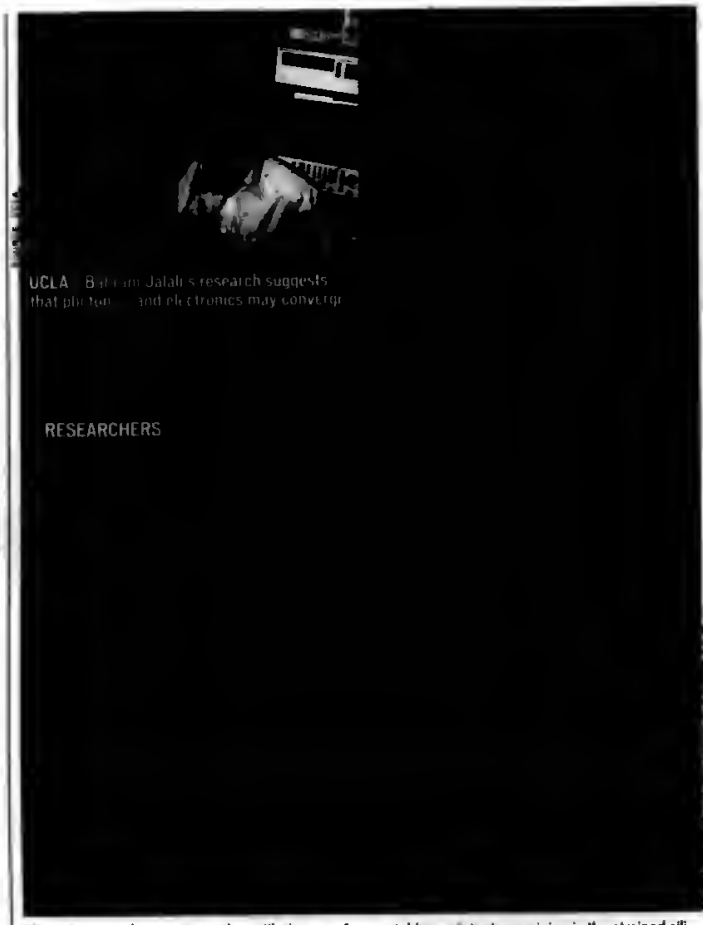

UCLA Bahram Jalali's research suggests that photonics and electronics may converge

RESEARCHERS

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DIFFERENCE ENGINES

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THE PAPER AND INK USED IN THE ORIGINAL PUBLICATION MAY AFFECT THE QUALITY OF THE MICROFORM EDITION

'By the Way, We Have an Acquisition in Progress'

Our manager has to scramble upon learning that a deal to acquire a smaller company will be signed soon. By Mathias Thurman

SECURITY MANAGER'S JOURNAL

THIS OTHER day, I learned that my company has been working for several months to acquire a smaller company (fewer than 500 employees). As usual in such situations, I and the rest of the IT department were informed rather late in the process. In fact, the deal is supposed to be signed in a couple of weeks. That means we have to scramble to ensure that systems are properly integrated and that security measures are consistent across the new company.

Naturally, our calendars have suddenly filled up with integration meetings, and other projects are on hold. My first question in these situations is always, "What is it that we are acquiring?" The answer might be source code, hardware, patents, people or a customer base. In this case, it's source code that the acquired company has spent many years developing.

As I've explained before, I came to my employer with the understanding that one of my top priorities would be protecting its intellectual property, and I've taken several steps to ensure its security. Now we are acquiring a valuable chunk of intellectual property, and I needed to know what was being done to protect it.

I had reason for concern, since workers fearful for their continued postacquisition employment have been known to sabotage source code or other valuable intellectual property. I was also concerned because small companies don't always invest a lot of money and technology in the protection of their IP. I had to make sure that we either immediately secured backups of the data or persuaded our acquisition target to put the source code into escrow until the deal was closed. I got some good news on this score: Our general counsel's office was ahead of the game and had already ensured that the source code was placed into escrow.

Next on my list of concerns is the integrity of my company's infrastructure. At some point, we will be placing a dedicated circuit at the acquired company's headquarters, effectively integrating our two networks.

I've spent a lot of time over the past year ensuring that our network is free from malicious activity. I can happily report that it's been about six months since we were last hit by a worm outbreak, and I'd like to extend that track record.

My plan is to conduct a vulnerability assessment on the acquired company's premises to determine whether we will be exposed to any malicious, illicit or otherwise unauthorized activity. If I have enough time, I'll travel there and do it myself. If I don't, I'll hire a consultant. Either way, I will rely on a vulnerability assessment scanner such as Atlanta-based Internet Security Systems Inc.'s Internet Scanner. For quick assessments, Internet Scanner is a very fine tool.

> We are acquiring a valuable chunk of intellectual property, and I needed to know what was being done to protect it

And just to be safe, we'll probably purchase an all-in-one gateway appliance, such as the Juniper SSG, which is a combination of firewall, virtual private network (VPN) and intrusion-detection technologies packed into a single device. We'll place this all-in-one appliance at the acquired company's gateway to block malicious activity from entering our company's network.

Planning Ahead

After that, my top priority involves the acquired company's business processes and policies. So far, I've had a clean bill of health after our Sarbanes-Oxley audits. Again, I want to keep it that way. Supposedly, we aren't on the hook for such audits of the new company for a year. That's fine, but that doesn't mean we can be idle.

We've implemented a lot of procedures that have helped us do well in the Sarbanes-Oxley audits, such as issuing SecurID tokens, controlling administrative access to financial systems and using Tripwire to flag all changes in systems. I'll need to find out what systems the acquired company has in place and then decide whether we need to upgrade them.

I've also asked for a copy of the company's security policies. This will allow me to assess how serious it has been in regard to security. If it basically has no policies, then I'll have to be extremely cautious in my security assessment and maximize the restrictions placed on its infrastructure.

Finally, I want to audit the acquired company's firewalls, VPN concentrators, router access-control lists and other security infrastructure. I want to ensure that there are no holes or "hidden prizes" tucked into its network. Although the company has assured us that it has no partner connections, I know from experience that such connectivity finds its way into a company's network with little oversight, especially when the company outsources much of its network operations and administration.

I gave the company's IT manager a detailed security questionnaire, which he is still completing. Naturally, I don't expect him to be able to sit at a conference table and rattle off answers to my questions; I know I wouldn't be able to do that either. We're talking about a lot of stuff: password policies, authentication strategies, incident response practices, virus mitigation, server and desktop baseline configuration, switch virtual LANs, static routes, filtering and encryption, just to give a hint of what needs to be assessed.

Once the questionnaire is completed, I can determine the points of concentration for the audit and assessment, as well as get a good feel for the overall security posture of the company. So far, having received a few pages from the IT manager, the only areas that concern me are the password policy and the employee-termination process. Both of these issues are related to Sarbanes-Oxley, and I want to make sure that we don't inherit any problems in that area. When I get the rest of my answers, I'll be able to complete my assessment to ensure a secure integration. ▶

WHAT DO YOU THINK?

This week's journal is written by a real security manager. "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias.thurman@yahoo.com, or join the discussions in our security blogs: **computerworld.com/blogs/security**

To find a complete archive of our Security Manager's Journals, go online to: **computerworld.com/secjournal**

SECURITY LOG

Security Bookshelf

Hacking Exposed: Web Applications, 2nd Edition, by Joel Scambray, Mike Shema and Caleb Sima (McGraw-Hill Osborne Media, 2006).

Web application security is one of the most challenging aspects of computer security, and with more and more applications moving to a Web-based architecture, it's crucial. This informative book provides an abundance of relevant and easily understandable examples and theories, from the basics of Web hacking to input validation, SQL injection, and Web authorization and authentication. It's a must-have for your information security library.

– MATHIAS THURMAN

FBI Hacker Gets House Arrest

Joseph Thomas Colon of Springfield, Ill., a computer consultant who pleaded guilty to exceeding authorized access to FBI computers, has been sentenced to six months of home detention and ordered to pay $20,000 in restitution. Colon, who could have received an 18-month prison sentence, said an FBI agent provided him with the password to an FBI system to expedite his work.

DHS Still Without Cybersecurity Czar

One year after it was created, the position of assistant secretary for cybersecurity and telecommunications at the U.S. Department of Homeland Security remains vacant. A spokesman who said the DHS will name a candidate soon cited the salary as a roadblock.

'By the Way, We Have an Acquisition in Progress'

Our manager has to scramble upon learning that a deal to acquire a smaller company will be signed soon. By Mathias Thurman

SECURITY MANAGER'S JOURNAL

THE OTHER day, I learned that my company has been working for several months to acquire a smaller company (fewer than 500 employees). As usual in such situations, I and the rest of the IT department were informed rather late in the process. In fact, the deal is supposed to be signed in a couple of weeks. That means we have to scramble to ensure that systems are properly integrated and that security measures are consistent across the new company.

Naturally, our calendars have suddenly filled up with integration meetings, and other projects are on hold. My first question in these situations is always, "What is it that we are acquiring?" The answer might be source code, hardware, patents, people or a customer base. In this case, it's source code that the acquired company has spent many years developing.

As I've explained before, I came to my employer with the understanding that one of my top priorities would be protecting its intellectual property, and I've taken several steps to ensure its security. Now we are acquiring a valuable chunk of intellectual property, and I needed to know what was being done to protect it.

I had reason for concern, since workers fearful for their continued postacquisition employment have been known to sabotage source code or other valuable intellectual property. I was also concerned because small companies don't always invest a lot of money and technology in the protection of their IP. I had to make sure that we either immediately secured backups of the data or persuaded our acquisition target to put the source code into escrow until the deal was closed. I got some good news on this score: Our general counsel's office was ahead of the game and had already ensured that the source code was placed into escrow.

Next on my list of concerns is the integrity of my company's infrastructure. At some point, we will be placing a dedicated circuit at the acquired company's headquarters, effectively integrating our two networks.

I've spent a lot of time over the past year ensuring that our network is free from malicious activity. I can happily report that it's been about six months since we were last hit by a worm outbreak, and I'd like to extend that track record.

My plan is to conduct a vulnerability assessment on the acquired company's premises to determine whether we will be exposed to any malicious, illicit or otherwise unauthorized activity. If I have enough time, I'll travel there and do it myself. If I don't, I'll hire a consultant. Either way, I will rely on a vulnerability assessment scanner such as Atlanta-based Internet Security Systems Inc.'s Internet Scanner. For quick assessments, Internet Scanner is a very fine tool.

And just to be safe, we'll probably purchase an all-in-one gateway appliance, such as the Juniper SSG, which is a combination of firewall, virtual private network (VPN) and intrusion-detection technologies packed into a single device. We'll place this all-in-one appliance at the acquired company's gateway to block malicious activity from entering our company's network.

Planning Ahead

After that, my top priority involves the acquired company's business processes and policies. So far, I've had a clean bill of health after our Sarbanes-Oxley audits. Again, I want to keep it that way. Supposedly, we aren't on the hook for such audits of the new company for a year. That's fine, but that doesn't mean we can be idle.

We've implemented a lot of procedures that have helped us do well in the Sarbanes-Oxley audits, such as issuing SecurID tokens, controlling administrative access to financial systems and using Tripwire to flag all changes in systems. I'll need to find out what systems the acquired company has in place and then decide whether we need to upgrade them.

I've also asked for a copy of the company's security policies. This will allow me to assess how serious it has been in regard to security. If it basically has no policies, then I'll have to be extremely cautious in my security assessment and maximize the restrictions placed on its infrastructure.

Finally, I want to audit the acquired company's firewalls, VPN concentrators, router access-control lists and other security infrastructure. I want to ensure that there are no holes or "hidden prizes" tucked into its network. Although the company has assured us that it has no partner connections, I know from experience that such connectivity finds its way into a company's network with little oversight, especially when the company outsources much of its network operations and administration.

I gave the company's IT manager a detailed security questionnaire, which he is still completing. Naturally, I don't expect him to be able to sit at a conference table and rattle off answers to my questions; I know I wouldn't be able to do that either. We're talking about a lot of stuff: password policies, authentication strategies, incident response practices, virus mitigation, server and desktop baseline configuration, switch virtual LANs, static routes, filtering and encryption, just to give a hint of what needs to be assessed.

Once the questionnaire is completed, I can determine the points of concentration for the audit and assessment, as well as get a good feel for the overall security posture of the company. So far, having received a few pages from the IT manager, the only areas that concern me are the password policy and the employee-termination process. Both of these issues are related to Sarbanes-Oxley, and I want to make sure that we don't inherit any problems in that area. When I get the rest of my answers, I'll be able to complete my assessment to ensure a secure integration. ▶

WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussions in our security blogs: **computerworld.com/blogs/security**

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SECURITY LOG

SONICWALL

The Singularity

BY JAN MATLIS

BEFORE it became the province of futurists, the word *singularity* had significance in both mathematics and the physical sciences. A mathematical singularity is a point at which a function is not "well behaved." According to *http://mathworld.wolfram.com*, it "blows up or becomes degenerate" — that is, it stops working in a predictable way.

In cosmology, the word *singularity* is used to describe the event horizons created by physical processes so fabulous that essentially no information can be transmitted from them. Among these are black holes, whose gravities do not permit light to escape, and the big bang, before which nothing is knowable.

In either case, these technical uses of the word have human connotations of uniqueness, incomprehensibility and danger. So it is perhaps not surprising that technofuturists and transhumanists see humanity and possibly all of creation hurtling toward something they call the Singularity.

The idea was popularized by San Diego State University mathematician Verner Vinge in the 1990s and given renewed attention in 2005 by the storied inventor Ray Kurzweil with the publication of his book *The Singularity Is Near: When Humans Transcend Biology* (Viking Adult).

DEFINITION

The Singularity, which has other technical meanings for mathematicians and cosmologists, is that point in time described by futurists like Ray Kurzweil in which technological progress allows machine and human intelligence to merge.

The Singularity Simplified

QUICK STUDY

"Within a few decades, machine intelligence will surpass human intelligence, leading to The Singularity — technological change so rapid and profound it represents a rupture in the fabric of human history."

RAY KURZWEIL, INVENTOR AND AUTHOR OF *THE SINGULARITY IS NEAR: WHEN HUMANS TRANSCEND BIOLOGY*

In a precursor article, "The Law of Accelerating Returns," published in 2001, Kurzweil wrote: "Within a few decades, machine intelligence will surpass human intelligence, leading to The Singularity — technological change so rapid and profound it represents a rupture in the fabric of human history. The implications include the merger of biological and nonbiological intelligence, immortal software-based humans, and ultra-high levels of intelligence that expand outward in the universe at the speed of light."

This millenarian vision of a positive feedback loop of ever-expanding intelligence and organization creates what might be called anti-entropy. When mankind reaches the Singularity, the universe will no longer be dominated by entropy. On the Web, there are sites for supporters of this philosophy, who identify themselves as extropians.

This change has also been viewed more ambiguously. For example, Vinge wrote of machine intelligence in a paper in 1993: "Within 30 years, we will have the technological means to create superhuman intelligence. Shortly after, the human era will be ended."

Although Vinge does not specify whether this is a good or bad thing, the comment echoes another famous quote that the Polish mathematician Stanislaw Ulam attributed to John von Neumann in a 1958 conversation: "The ever-accelerating progess of technology . . . gives the appearance of approaching some essential singularity in the history of the race beyond which human affairs as we know them could not continue." The Ulam/von Neumann reference may be the first use of the word *singularity* in this context.

Kurzweil's understanding of the Singularity, in contrast, is an unclouded one in which machine intelligence and human brains fuse for a future in which human/machine hybrids invent ever-smarter machines and hybrids, and do this at ever-accelerating rates. They achieve a kind of immortality.

Kurzweil envisions the possibility of downloading brains and reconstituting them, thereby successfully propagating one person's consciousness, bringing a whole new perspective to Alan Turing's take on the question of whether machines can be said to think. (The Turing Test suggests that the important question for artificial intelligence is whether a human judge can discriminate between the responses of another human and those of a machine.)

Even biological immortality is possible, according to Kurzweil, because of what he calls the three overlapping revolutions of GNR — genetics, nanotechnology and robotics. The superhuman intelligences of the coming decades will know which genes to turn on and off in order to prolong life indefinitely. Nanotechnology will enable the infusion of human bodies with robotic servants to repair biological tissues and aid in the downloading of brains.

And all of this is coming sooner than we think, according to Kurzweil and fellow futurists. Using the evidence of Moore's Law concerning the doubling of computer power as a paradigm, Kurzweil identifies exponential growth in the capacity of information technology with a biblical sweep that stretches from the beginning through six epochs:

1. **Physics and Chemistry** — from the big bang through the entire prelife era of the universe.
2. **Biology and DNA** — stretching from the beginning of life on earth.
3. **Brains** — the advent of human dominance.
4. **Technology** — approaching culmination in the 20th century.
5. **Merger of Human Technology and Human Intelligence** — which is the Singularity.
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Kurzweil is particularly fond of parables that explain the overwhelming nature of exponential increase. In his 2001 paper, he cites a story about the meeting of a Chinese emperor and the man who invented chess. When the chess inventor is offered a reward by the emperor, he asks only for a grain of rice to be placed on the first square of a chess board, to be doubled on each of the subsequent 63 squares. Somewhere after the middle of the chess board, the doublings exceed the capacity of China to produce rice. By the end, the number of grains would be unimaginable, a kind of singularity.

Our 19th century predecessors used the word *singular* to also mean something that is peculiar. One can imagine Sherlock Holmes noticing a singular incident.

But lest anyone think that the Singularity is viewed that way in the hidebound reaches of the ivory tower, Stanford University's Symbolic Systems Program co-hosted an event with the Center for the Study of Language and Information in May. The Singularity Summit was described as "a rare gathering of thinkers to explore the rising impact of science and technology on society. The summit has been organized to further the understanding of a controversial idea — the singularity scenario."

So if your IT department is having the blues or is perhaps confused about how to integrate all that stuff that has come in the door and how to make it fast, efficient and dependable, maybe you just have to hang on a little bit longer. Kurzweil and his cohorts suggest that a more comprehensive integration is on the horizon.

Matlis is freelance writer in Newton, Mass. You can reach him at jmtgpcmcm@netzero.net.

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BRIEFS

SpectorSoft Unveils Net Monitoring Tool

Spector 360, an application that allows companies to see a wide range of online employee habits and behaviors, is now available from Internet monitoring and surveillance vendor SpectorSoft Corp. The product has 50 built-in reports and customization features. It allows companies to analyze in detailed reports – along with screenshots – what their employees are doing on the Internet, including inappropriate conduct, time spent surfing, content being searched for, highest and lowest productivity, and longest gaps in Internet usage, according to the Vero Beach, Fla.-based company. A 50-client license starts at $1,995.

Mediasurface Updates Content App

Mediasurface PLC has launched Version 5.4 of its Morello content management application. The product features new drag-and-drop functionality and content-tracking capabilities. Morello V5.4 uses Asynchronous JavaScript and XML technology to access the Morello Web Client application, which gives Morello 5.4 the same usability and accessibility functions already included in the company's flagship browser-based Smart Client application, according to the Newbury, England-based content management vendor. Morello, which also includes a taxonomy browser and new right-click in-context menus, is sold on a per-CPU license basis. It is priced from $200,000 to $1 million.

Alcatel Offers OmniPCX Office 5.0

Paris-based telecommunications products vendor Alcatel last week announced the general availability of the OmniPCX Office 5.0. The new release is a communications server for small and midsize businesses. This version includes a PC-based attendant console and voice-over-wireless-LAN capability, according to the company. Pricing was not released.

JAY CLINE

The Reality Factor

IF YOU WORK for a financial institution or a company that processes credit card transactions, this isn't news to you: There's a growing push to require two-factor authentication for logging into your company's information systems.

In January 2005, the payment card industry issued the PCI data security standard, which included this nugget: "Implement two-factor authentication for remote access to the network by employees, administrators and third parties." Last October, the Federal Financial Institutions Examination Council, which creates the standards for federal audits of U.S. financial institutions, issued guidelines stating that single-factor authentication was "inadequate" for Internet-based products and services such as online banking.

In the wake of these mandates, financial institutions are also finding out how expensive and operationally challenging it is to require users to remember a password and also possess some other mechanism, such as a plastic token, to log in. But in any event, it's probably time to take a step back and reassess the alternatives.

Security professionals have traditionally defined two-factor authentication this way: using something you know — usually a password — along with either something you have, such as a card key, or something about who you are, such as your fingerprint. The idea behind this approach is that it would be virtually impossible for a criminal to simultaneously be in possession of two of these types of authenticators.

This is where theory runs up against some hard reality. Password management already chews up huge amounts of IT resources, with password resets accounting for roughly a third of help desk inquiries in many companies.

Add to this the prospect of implementing new hardware and software on employee laptops to handle card-key swipes or fingerprint scans, or requiring customers to always carry another card or token on their key chains, and suddenly you're facing an enormous financial and operational undertaking.

Companies could decide to greatly reduce the number of employees with remote access to the network. They could restrict most employees to remotely access only their e-mail through a Web application. It simply may be too expensive to grant remote network access as a default privilege. But employees not being able to get to their files on the network may result in lost productivity.

Banks could start charging customers to use online banking to pay for the increased administrative costs of two-factor authentication. Customers would probably welcome this as much as they did the chance to pay ATM fees. The result could be fewer online banking customers.

Some privacy and security leaders say it's time to take another look at the situation. They're asking two main questions:

- What risks are we actually trying to mitigate with these new regulations?
- Are there other ways, besides traditional two-factor authentication, to combat these risks?

The standard answer to the first question has been simple: Weak passwords can be cracked with free software available on the Internet; can often be discovered inside files stored on the network, on people's laptops or on sticky notes left inside desk drawers; and can be solicited through social engineering and phishing e-mails.

These are serious risks that could expose a company to a publicized security breach notification, which often turns out to be a multimillion-dollar affair. But are there other sufficiently effective and cheaper ways to compensate for weak passwords?

My counterparts point to a few possibilities:

- **Challenge questions.** Who says you always need to choose from two of the three categories of what you know, what you have and who you are? Why not choose two authenticators based on what you know?

If you can choose the right set of challenge questions — such as "What high school did you graduate from?" or "What is your favorite pet's name?" — you can counter some of the weaknesses common to passwords.

- **Photo "passwords."** This is another variant of a second "what you know" authenticator. In this method, you choose a photo — either of yourself or something memorable from a gallery — that will be associated with your account. Each time you log in, you face a random selection of photos that will always include the one you originally designated, which you must choose correctly.
- **"Bingo" cards.** A form of "what you have," they're wallet-size grids resembling bingo cards that you receive when you set up your account. When you log in, the system will randomly generate coordinates. The cell at that coordinate will have a PIN that you enter.
- **Fraud detection.** Instead of adding a second authenticator, it may be more cost-effective to strengthen your fraud-detection measures, looking for anomalies based on IP address, geographic location or other behavior inconsistent with the user's past patterns.

Security professionals will differ on which authenticators they think are right for their organizations. But they'll all agree on one point: It's bad for business and bad for the economy to mandate a one-size-fits-all solution. Continued flexibility is the right way to address this complex risk.

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Using Technology to Get Better Answers Faster
Keith Collins, Senior Vice President and Chief Technology Officer, SAS

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Bill Hostmann, Research Vice President, Gartner

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IT MENTOR

Conducting IT

Aligning IT with the business is a lot like conducting an orchestra, says Accenture CIO Frank Modruson. He offers some hints to help IT and the business make beautiful music together. **PAGE 36**

Q&A

The Ultimate Question

Would your customers recommend you to their friends? That question — and IT's role in affecting the answer — is what separates winning companies from the rest, says author Fred Reichheld. **PAGE 36**

OPINION

Whose Data Is It, Anyway?

Barbara Gomolski is thinking about who will build and manage electronic patient records, and the surprising answer may have implications for your business. **PAGE 36**

The Price Point

Companies struggle to cut costs and boost sales, but many ignore pricing. IT can help.

By Gary Anthes

NOT LONG ago, a major U.S. company embarked on an ambitious Six Sigma program to improve efficiency. The program was a big success, saving the company $250 million.

Problem was, the sales force, mindful of the cost reductions, increased customer discounts by $260 million, more than wiping out the savings.

"In many cases, there was no competitive action that required those price discounts," says Matt Johnson, managing director of the Mountain View, Calif., office of strategy and marketing consultancy Simon-Kucher & Partners LLC. "The salesmen had margin targets, and when costs went down, prices were systematically vacuumed down to a cost-plus markup."

Johnson says the company, which he won't name, employed the kinds of self-destructive pricing practices and philosophies that are common in industry today. He says that in recent years, IT has made it possible to price smarter, but a

ILLUSTRATION BY TIM BOWER

company's culture and management often stand in the way of its use of the technology.

As senior vice president for revenue integrity at Seton Healthcare Network in Austin, John Elver has a job title that suggests he won't let others give away the store. Indeed, aided by new price optimization and contract management software, he boosted annual revenue by almost $200 million by improving the sophistication of pricing at Seton's 21 medical facilities.

Previously, Seton had taken a crude approach to pricing. It would, for example, raise the prices of all its 60,000 items and services by 4% and then manually tweak the prices of a few selected items. Now Seton uses the Hospital Optimization System from PROS Revenue Management in Houston to model the effects of more fine-grained changes. The pricing models, which analyze some 70 million historical transactions and take into account the terms of complex contracts, can forecast customer demand and the associated revenue likely to result from various pricing decisions.

"Now we can say, for example, that we'll reduce prices for some items 35%, increase the others by 10% and still get a 4% average increase," Elver says. That mix of price changes might be far more effective in stimulating demand and boosting revenue than an across-the-board 4% increase would have been, he says.

Rolling out price optimization software required Seton to examine the ad hoc rules that hospital managers had carried in their heads over the years, like such-and-such an item ought to be priced at a certain multiple of some other item. Some of those rules of thumb were scrapped, some were codified into the models, and some new ones were developed, Elver says. "For the first time, we got an understanding of the absurdities in some of those rules," he says.

But Seton's new pricing methods, although much more flexible and powerful than previously, met some resistance from hospital managers, especially when they were told they must reduce certain prices — and, hence, their revenue — because the models showed that would improve revenue or profits for the medical chain as a whole. "So the biggest challenge for me is one of change management," Elver says. "There is a suspicion of 'black boxes.'"

Value Pricing

Traditionally, companies have focused their efforts to maximize profits on cutting costs and boosting sales. They organize themselves accordingly, with entire departments focusing on one objective or the other. Rarely is even a fraction of that effort put into optimizing the third variable that makes up a company's profit: unit price.

As a result, pricing is simplistic and formulaic at many companies. They either peg their prices to competitors' prices, called pricing to the market, or they add up production costs and tack on a standard markup, called cost-plus pricing.

A third and better approach, value pricing, involves segmenting buyers and setting prices based on the characteristics of each segment. For example, airlines guess that the business executive buying a ticket for a flight across the country next week will pay $1,000 for his seat, but the man planning a vacation for his family next summer won't pay more than $250 for the same seat. Value pricing requires good data mining and modeling capabilities as well as good analytic tools for understanding the results of pricing decisions.

Rich Farrell, vice president of information services at Piggly Wiggly Carolina Co., says that until 2005, the 115-store grocery chain used old-fashioned, ad hoc methods to set prices. "We knew the cost of product from suppliers. We had designated markups. We kind of knew what our competitors were offering, and it was a manual process," he says.

Now Piggly Wiggly uses the Consumer Demand Management service from DemandTec Inc. in San Carlos, Calif. Piggly Wiggly provides point-of-sale transaction histories and information about its 20,000 products to the model, which is run by DemandTec. It also specifies three objectives: Increase sales *x* percent, increase margins *y* percent, and maintain a favorable "price image" (neither too high nor too low compared with competitors). Suggested prices from the model, by product and store, go back to a pricing group at Piggly Wiggly.

> Enterprises have realized up to 20% profit improvements by using price management and profit optimization (PMPO) solutions. No other packaged software can deliver the same type of top-line benefits and address bottom-line inefficiencies. PMPO is the best kept secret in enterprise software. Many early adopters are reticent about their deployments because they provide competitive advantage. Now the success stories are getting out

The four-person pricing group is new, Farrell says. It has taken over the work previously done by buyers and others throughout the company while also maintaining the models run by DemandTec. "You need some dedicated people to manipulate and operate the model," Farrell says.

He says the pricing automation service has met all of Piggly Wiggly's objectives. However, "this is not inexpensive," he notes, declining to provide numbers.

Nova Chemicals Corp. is another company that found it helpful to reorganize people around the pricing function when it replaced mostly manual procedures with price management software. Nova changed pricing from a purely administrative function to part of direct commercial operations.

"It was a realignment of the work, realizing that pricing was a strategic function and a strategic tool as well as an administrative one," says Bill Gaughan, director of IT in Nova's Pittsburgh office. "And it was not an IT project; it was a business project with an executive sponsor and a business project manager."

Nova rolled out two price management tools from Vendavo Inc. in Palo Alto, Calif. They helped Nova reduce labor costs and errors in maintaining

a huge number of discrete prices that were the result of having 1,000 customers, 300 products, quantity discounts and rebates that varied by customer and product, and prices in multiple currencies.

The tools gave management much greater visibility into pricing practices and their consequences, Gaughan says. "We will announce a 3-cent-a-pound increase in some material, and we'd like to see a month later how much of that did I really get," he says. "Where were the competitive issues, the contractual issues, the administrative issues? The tools we used to have didn't give us the advanced analytics to see if the 3 cents really did what we needed it to do."

Tracking the results of an increase in list price in the chemical industry is not as simple as it might appear, since many discounts and price offsets lie between a price increase and the realized gain (see chart, page 34).

A Total View

A CIO who asked that her company not be named for competitive reasons says price analysis and optimization software from Zilliant Inc. in Austin cost $500,000 but is adding $2 million a year to the bottom line — representing a payback period of just three months.

She says the $1.4 billion manufacturer of lighting fixtures used to base its prices on cost, without regard to optimizing margins, and it did so at a very gross level. "Now we take a total view, not just material and labor, but also returns, rebates, promotions, discounts and so on — things we did not even consider before," she says.

Understanding all the components that affect a deal's contribution to profit provides "a foundation for our negotiations and helps us sustain our price points," she says.

The company is preparing to buy another Zilliant product, called Deal Manager. "This is really where the power of the analytics and the optimization is applied," says the CIO. "It will let us say, 'Can I go higher or lower on this deal?' " She says the company hopes to increase profits by $1.5 million with this kind of real-time sales support tool.

The CIO advises taking a practical and realistic approach to developing these kinds of systems. "Everyone goes into this thinking their data is clean," she says, laughing. "We were pulling data from 40 different data sources. We went into this way overconfident."

Apartment Investment and Management Co. (Aimco), a Denver-based company that owns and manages 240,000 apartment units, hired PROS Revenue Management to develop a pricing and revenue management system similar to those used by hotels and airlines. Lee Montgomery, vice president for revenue management and analytics at Aimco, says the idea was to move beyond "guessing — spinning around three times and saying, 'I think I'll charge this today.' "

He says these kinds of systems typically increase revenue, but not costs, by 2% to 4% per year. Three percent for Aimco would be $20 million to $30 million, Montgomery says. "The payback is off the charts," he says.

"And we understand a lot more about our business now," he adds. "It's sort of the 'Aha!' that everybody has. We've seen things we've never seen before, and it's our own data."

For example, these insights have enabled Aimco to increase profits by varying price quotes depending on the time of year a tenant says he wants to rent, rather than quoting a single rate, just as a hotel might have different rates for different seasons and days of the week.

Montgomery says many people distrust these kinds of systems because it can be hard to understand how they work. "They are very complicated, and if you go in and try to wow them with the science, you'll lose them," he says.

He advises getting the technical and financial people on board first and then using that support to reach out to others in the company.

Todd Mueller, market planning and analytics manager at J&L Industrial Supply in Southfield, Mich., says a new price-analysis tool enables J&L to understand past pricing and its effects as never before. And it puts that capability in the hands of end users for the first time. No longer do users have to ask IT to create some special report and then wait two days to find out it was not what was really needed, Moeller says.

Now, with Vision from Metreo Inc. in Palo Alto, sales managers can run through "three or four iterations in 20 minutes," he says. "It takes our historical pricing data — on a transaction line-item detail level — and lets us slice it and dice it on every imaginable attribute. I can look at customers by margin, by sales, by number of items purchased, by geography and so on." Some 200 such attributes can be called out, he says.

The Vision tool allows J&L to understand how the market is behaving, Mueller explains. "You can then see where pricing is not being set correctly and go fix it," he says.

Skeptics in Sales

But Mueller echoes a common concern of managers who preside over the roll-out of automated pricing systems. "The first hurdle is skepticism on the part of the salespeople. They want to know, 'How is this going to help me achieve my goals?' They are the most tactically oriented people in every company, as they should be," he says. "The second concern is, 'Are you going to take pricing autonomy away from me?' "

J&L did not take pricing autonomy away from its salespeople. And management was able to get them on board by pointing out the benefits of the system in identifying pricing mistakes.

"For example, they meant to give a 9% discount but accidentally gave 90%," Mueller says. "We found things that hadn't been caught in over a year. The salespeople are grateful because that's money in their pocket."

Mueller advises tackling pricing automation one step at a time. The Vision product, a backward-looking analysis tool, paid for itself easily just by finding pricing mistakes. Next, J&L plans to move to a more sophisticated and complex product, Metreo Target, that seeks to optimize future prices.

Finally, Mueller has some advice about selecting a pricing system. "Learn all about it. It's not as plainly evident as you may think. We thought this would be very easy, but we learned that as complex as pricing is, you can't be wooed by the sexy graphics," he says. "You have to really understand how it's going to fit into your business and make sure the tool is designed to solve the correct problem." ▸

The Ultimate Question

Winning companies know what it is and how IT can lead you to the right answer, says author **Fred Reichheld**.

FRED REICHHELD calls them "sinners." Indeed, you'd like to tell them where to go. It's the car rental company that charged you $8 a gallon for gas when you forgot to fill up on the way to the airport. It's the hotel that charged you more for telephone calls than for your room that day you lost your cell phone. And it's the brokerage firm that urged you to buy a dog of a stock while its underwriting arm was earning huge fees from that company.

Reichheld, founder of the Loyalty Practice at management consulting firm Bain & Co. in Boston, says many companies treat their customers shabbily for a simple reason: It can lead to short-term growth and help managers meet their financial goals. If you can get $8 for a gallon of gas, why leave that money on the table? But in his latest book, *The Ultimate Question: Driving Good Profits and True Growth* (Harvard Business School Publishing Corp., 2006), Reichheld argues that customers will put up with getting mistreated and fleeced for only so long. They will jump to one of your competitors at the first opportunity, badmouthing you all the way.

In contrast, the best-run companies, the "winners," are the ones that live by the golden rule, Reichheld says. They treat customers as they themselves would want to be treated, and that leads to real growth in revenues, profits and market share year after year. Winners like Enterprise Rent-A-Car Co., USAA, HomeBanc Mortgage Corp. and Southwest Airlines Co. consistently delight their customers, and their customers sing their praises.

Many companies don't even know if they are winners or sinners, Reichheld says, but winners have a high proportion of customers who answer yes to the "ultimate question": "Would you recommend us to a colleague or friend?" Customers who answer yes are "promoters," Reichheld says, and those who answer no are "detractors." The best companies have net promoter scores (percentage of promoters minus percentage of detractors) above 50%. Sinners often have a negative NPS — more detractors than promoters — and the NPS of the typical company lies between 5% and 10%, he says.

Companies looking for long-term success should first determine their own NPS, learn how to segment customers according to their profitability and then take actions to boost their NPS and profitability. It's a simple concept, but not one that's easy to implement. IT can help, Reichheld told *Computerworld*'s Gary Anthes.

How important is IT in measuring and managing your NPS? What's the most vital process in a business? It's figuring out how to create more profitable promoter customers. That generates growth, makes employees proud, makes investors rich, and builds your brand and reputation. Obviously, you should have the most relevant and reliable information so you can manage that process more intelligently. A really good IT system can support that, but most fail miserably.

How so? Most companies have a hard time even categorizing their customers as promoters, passives [satisfied but unenthusiastic customers] or detractors. And many companies even struggle with knowing the level of profitability of their customers. The [goal] is to create more customers who are profitable promoters, but if you don't know how profitable your customer is, you don't know half that equation. And if you don't know if they are promoters, passives or detractors, you don't know the other half.

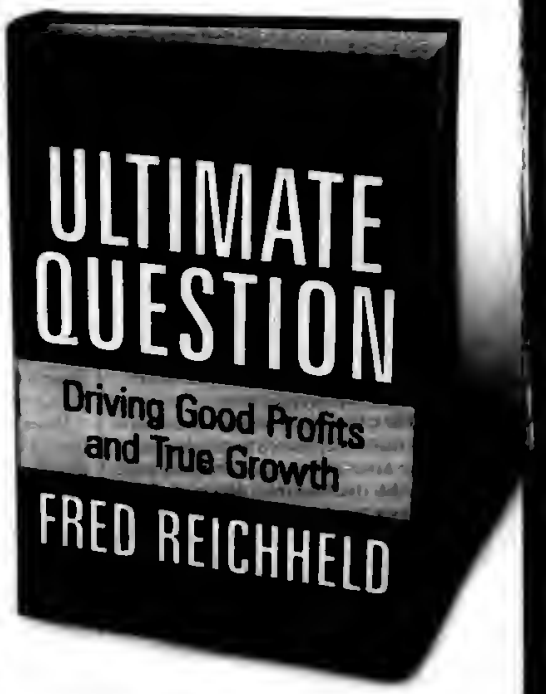
Sounds like a job for a good customer relationship management system. A lot of CRM systems have gone to the third level of sophistication without getting the basics. You need some basic measure of success and failure, and that's missing. You know the joke about the drunk looking for his wallet under the street lamp? He knows he lost it in the alley, but it's dark back there. Accounting systems measure what's easy to measure — stuff like plant and equipment and depreciation — but that's not the fundamental asset in most companies.

USAA is a good example of a company that has used IT effectively, and they have unbelievably good NPS scores — 80%, and even 90% in their credit card business.

Could NPS be incorporated into accounting systems, like plant, equipment and depreciation are? My goal is to have every public company report a net promoter score that is audited and verified just as carefully as auditors now look at profits.

Do the sinners use IT to sin? You can invest in very sophisticated CRM systems that bilk customers or manipulate them. Take the airline yield management systems — very complex pricing systems that basically take every possible penny out of the customer's wallet. So you don't have successful airlines; you have bankrupt airlines. It looks like the right thing to do, because why should you leave money on the table? But it turns out that the airlines that are not doing that stuff are the ones that are prospering. You can put in a lot of IT to pick your customers' pockets, but over time, they'll stop doing business with you.

Your book is pretty hard on highly automated call centers. Call centers can be strategic advantages when done right. But most companies treat them as cost centers where you just try to squeeze down cost and increase productivity with very little understanding of whether they are building better or worse customer relationships. Customers resent having to waste their time going through all those menus and computer responses because what that communicates is, "Your time as a customer is not respected by us, but our time is so valuable we can't afford to give it to you." ▶



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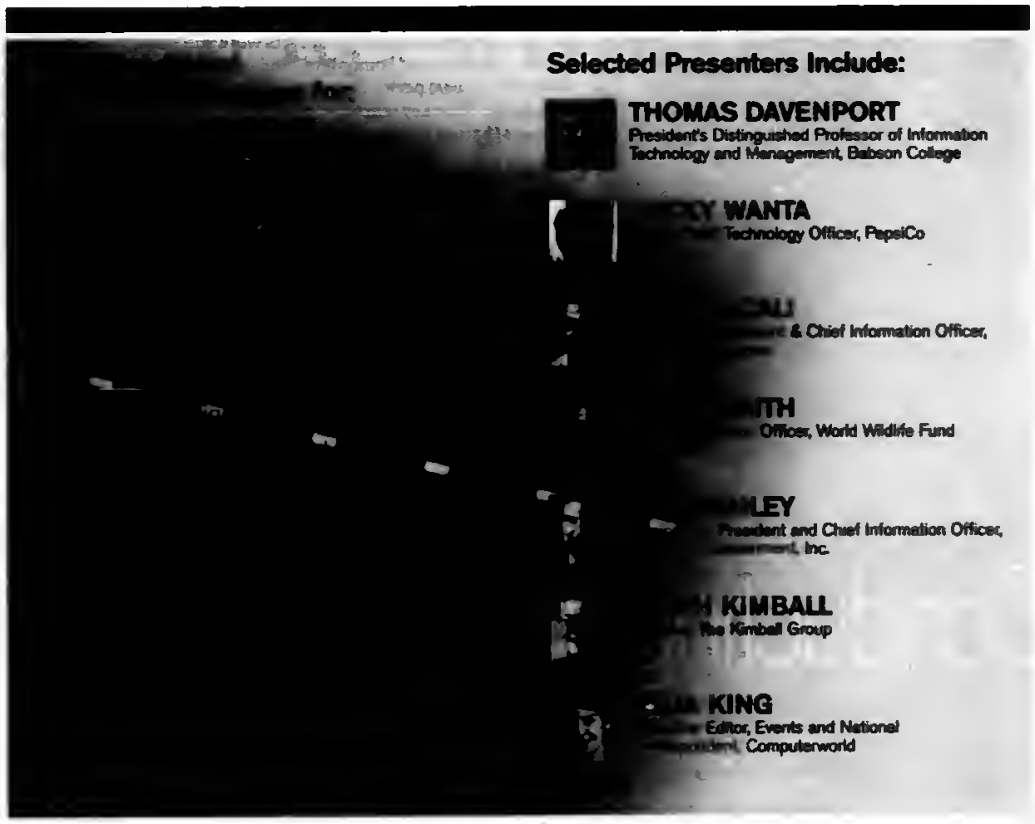

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IT MENTOR

Conducting

A CIO's tips for orchestrating alignment.

AS AN opera enthusiast, I think of IT as the orchestra within an operatic production. The orchestra is always there through every rehearsal and quickly makes necessary adjustments — scrapping versions, learning new endings or making accommodations for the latest venue. (So we're moving this production to an outdoor amphitheater with one electrical outlet 50 yards from the stage? No problem!)

For IT leaders, it's easy to identify with the conductor. He is integral to creating the sea upon which the opera's story floats. When acknowledged, the conductor gives a quick wave of one hand, baton in the other, to conduct the finale. ("Glad you liked that new application we developed, but let me get back to the product launch.")

Just as a conductor runs a show within a show while managing the wide and varied elements of his "service organization," we IT leaders are running a business within a business.

Our job is to offer our company digestible "passages" of IT that our "audience" — the employees of our organization — can understand and use to maximize the performance of the company. We synthesize and interpret the complexities of a "score" — the technology needs of our company — to develop a clear vision. We work with other governing bodies to make the best decisions (just as conductors work with producers, directors and composers), and ultimately we strive for the best performance possible.

Here are three key tenets of "conducting" IT as a business that we use at Accenture:

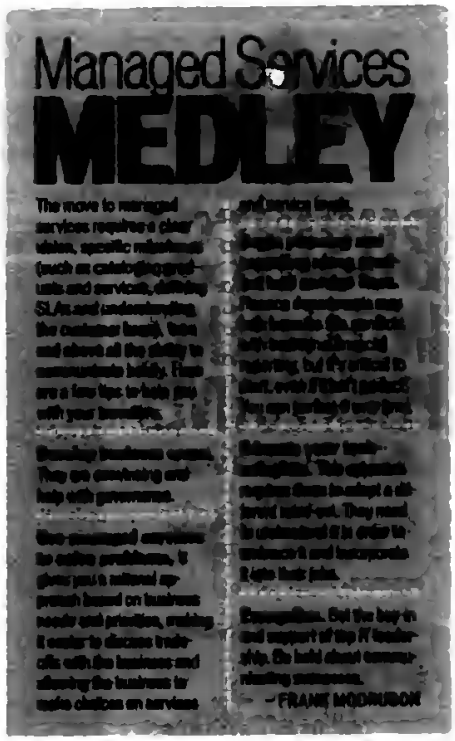
1 TRANSITION TO MANAGED SERVICES. In IT services, as in music, different folks like different notes. So rather than requiring your company to use a single song sheet (the traditional one-size-fits-all IT model), try providing a defined set of products and services to the business, with service-level guarantees and prices that are benchmarked to the marketplace. This approach has enabled my company to realize substantial cost savings while maintaining and often enhancing service levels.

For example, we have five e-mail offerings that differ primarily by size. We attach a price to each and let the business units decide. They may choose, say, bigger mailboxes for senior executives and smaller ones for junior staffers. By applying this approach, we found that the average mailbox size decreased from 275MB to 140MB across all business units. The resulting cost savings were substantial. Since we put managed services in place, our annual e-mail costs per user have decreased 76%, from $466 to $112.

2 DEVELOP A SCORECARD. A conductor's musical score is much more than the notes each instrument plays. It provides guidance to support decisions about the architecture, tempo, texture and timbre of the sound. Likewise, I think of an IT scorecard as enabling us to focus more on the "I" in IT. Basic IT metrics such as costs, progress on key initiatives and service uptime are important, but an IT scorecard that measures progress against business goals enables IT leaders to provide better context and more meaningful data with which to run the IT business. I ask questions like, "How satisfied are our employees, business sponsors and end users? Are we achieving the benefits expected in our business cases? What is our cost of providing IT to different workforces? What is the training budget spent per employee?"

In addition, we benchmark against competitors. This allows the IT organization to recalibrate operations as necessary to ensure continued strong results and harmony between business and IT.

Scorecarding IT performance helps the IT department, and ultimately the entire company, make better decisions and operate more efficiently. With consistent business-oriented metrics, you can perform year-to-year comparisons, track trends and more easily show where IT has added value. Curtain call, anyone?



3 ENSURE GOVERNANCE. Theatrical productions use the expertise of the director, conductor, composer, costume designer, lyricist, set designer and lighting technicians. IT organizations can adopt the same approach when it comes to governance. While most CIOs create the IT strategy, the people who run the various parts of the company are the sponsors of IT and should have seats at the table. At Accenture, major IT decisions are confirmed by an IT steering committee made up of the chief operating officers from our businesses. This ensures that our technology initiatives are aligned with the needs of the business and have its support.

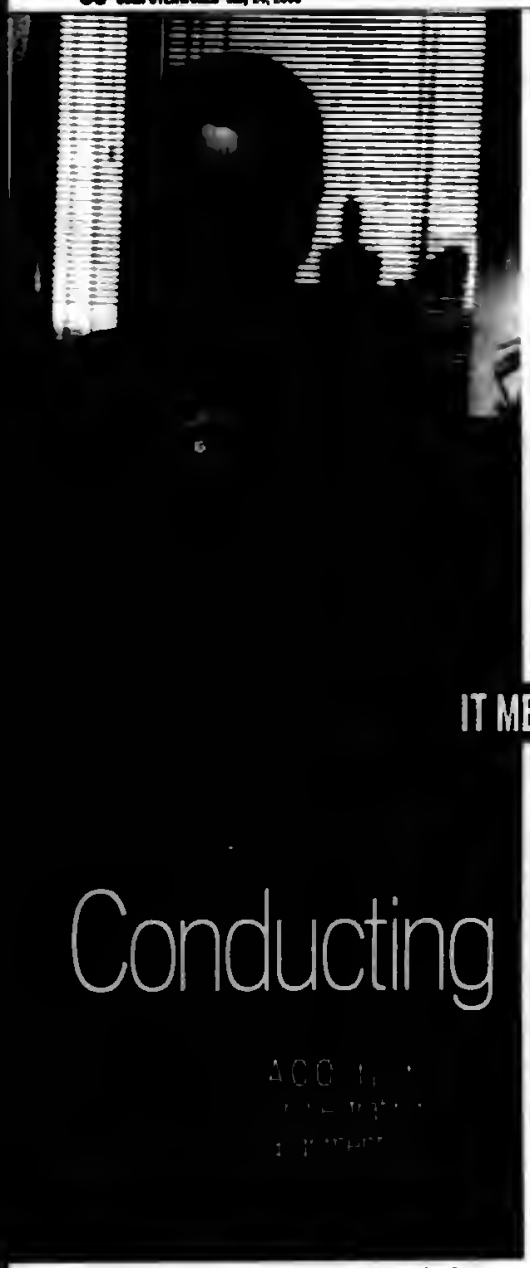
And thanks to a robust review process, our operas aren't over when the houselights come on. We closely monitor — and report to the steering committee — how well completed projects met expectations.

Using this approach, you can drive cost efficiencies, improve IT's response to business needs, enhance decision-making and build a competitive advantage. Since 2001, our own customer satisfaction scores have risen from 3.2 to 3.9 (a score of 5 is outstanding). Our performance goal is a standing ovation.

If you incorporate a managed services approach, scorecards and robust governance models, you'll find alignment to be a simple medley, not a virtuosic struggle. You'll also more easily view what you provide to the business as a service.

It doesn't happen overnight. It will require practice and numerous adjustments. But it will bring your performance to new heights. Break a leg, maestro!

Modruson is CIO at Accenture. Contact him at frank.b.modruson@accenture.com.



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BARBARA GOMOLSKI

Whose Data Is It, Anyway?

I RECENTLY met with a group of CIOs from large hospital networks. These IT leaders are under the usual pressures to do more with less, continue to be relevant to their organizations, provide reliable and robust security and improve patient care. In addition, many of these CIOs are also in the midst of major transformations, moving traditional paper-based medical records into the digital world. These programs are usually referred to as electronic patient record initiatives. They are multiyear, multimillion-dollar projects that require significant organizational and process changes.

In my conversation with these health care CIOs, I asked what the electronic patient record will mean for me as a consumer. What they told me has very interesting implications for individuals but also for any business that is data-intensive and manages sensitive customer information.

Anybody who has had health challenges knows how frustrating it can be to endure repeated inquiries about one's health history. It's even more frustrating to have endured and responded to these inquiries only to find that the clinicians have failed to record the information properly or have drawn the wrong conclusions somewhere along the line. A failure to record an allergy, for example, could result in a prescription for the wrong type of medication.

I learned that digital medical records have the potential to vastly improve the level of service and the quality of care I receive. Once the records are a reality, if I enter a hospital for a procedure, the doctors and nurses won't have to repeatedly ask me questions about my medical history. That information will be available to them in my electronic patient record. They'll also have electronic access to my medical test results and X-rays. Hence the expected boost in patient safety.

Significant data management challenges remain regarding the move to digital medicine, however. That's because most of us go to many different health care providers, some of whom are independent and some of whom are affiliated with health systems. Many of these health care providers haven't automated their records. So if I enter a hospital that uses digital medical records, information about everything done to me there is available electronically. But the medical records outside the hospital are not.

I think it's safe to assume that consumers will continue to use a variety of medical service providers who operate in various stages of automation. Suffice it to say that patients won't be able to count on the medical community to integrate and manage their disparate databases.

But the electronic patient record can improve quality of care only if it is complete and up to date. Anything less than that pretty much defeats the purpose.

The way that many health care CIOs expect these issues to be resolved may surprise you. It seems that in this fragmented world of health care, the only viable way to construct and manage a digital medical record is for the individual consumer to own it. This notion was actually supported strongly by the CIOs in my health care circle.

The idea of a patient-managed electronic record took me aback at first. I must admit, the notion that I will track and manage my own electronic medical records is a bit scary to me (and it would be to you, too, if you could see my checkbook). But I think it actually makes sense.

Moreover, tools are emerging that will make patient-managed electronic medical records a more attractive and viable option. Intuit already offers Quicken Medical Expense Manager, a tool for organizing medical and insurance transactions. The software can also create a medical history for each user. On that software vendor's forum, several messages posted by customers suggest that people are indeed using the software to create their own electronic patient records. These folks are vigorously encouraging the developer to move product development in this direction.

Portals and Web sites that offer such applications will also likely crop up, and you can expect health care providers to offer their own versions of such tools.

Putting data management in the hands of the user seems to be the only viable option for health care providers. And for any organization that manages a wealth of customer data but is not principally in the data management business (such as a credit bureau), it may also be a harbinger of things to come.

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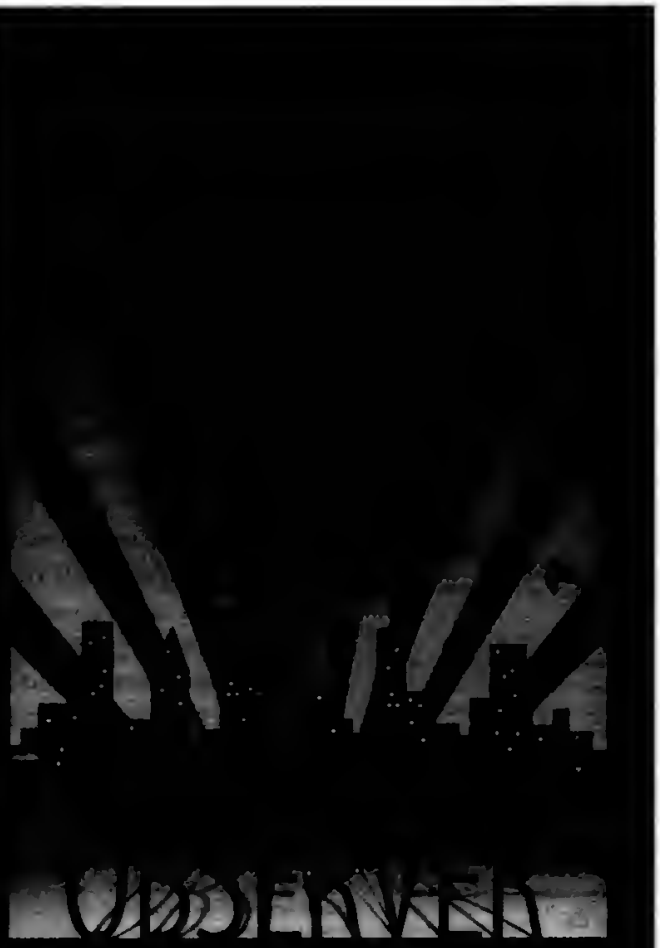

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The most recent employment data from the Bureau of Labor Statistics reports job growth for the information technology sector. While that's good news across the industry, it's even better news for companies who have used the lull in hiring to sharpen their ability to offer a quality environment for their IT professionals.

According to Milt Haynes, past president of the National Black Data Processing Association and leader of the annual survey, "Best Companies for Blacks in Technology," this year's evaluation points to some important trends about that environment, as it applies to African-Americans but also to employees in general. Specifically, companies that are among the best "all have upward mobility programs, strong succession planning," says Haynes. "And they have affinity groups and mentoring that reach out to individuals.

"In other words, to be the best is not the result of any one thing," Haynes explains. "Being the best requires an integrated approach."

Haynes says that as the demand for IT workers picks up, structured approaches to developing bench strength in the IT organization is more important than ever. "The tendency is to say that diversity is important in that process," he says. "The best companies know diversity is a part of bench strength."

Working with WorkplaceDiversity.com, BDPA has named the 2006 Best Companies for Blacks in Technology, who use such integrated approaches. The companies are Allstate Insurance, Blackwell Consulting Services, Compuware, Eli Lilly and Co., Health Care Service Corp. (HCSC), Hewlett-Packard, HSBC North America, Lockheed Martin Corp., Merck and Co., and Procter & Gamble. Those making the list for the first time were Hewlett-Packard, Eli Lilly, Procter & Gamble, and HCSC.

Allstate, HCSC and Lockheed Martin were also recognized for outstanding community outreach, diversity recruiting and promoting a significant number of African-Americans in their IT organizations.

Of the top companies, one will be announced as winner of the Epsilon Award during DPA's 28th Annual Convention Aug. 2-5 in Los Angeles.

The current uptick in hiring is driven by business growth, according to Robert Half Technology (RHT). IT spending is expected to increase by 5.4 percent this year with technology requirements tied to growth, additional compliance regulations, increasing customer-support requirements, systems upgrades and security. Retention, according to RHT, is a crucial element of the integrated staffing approach. CIOs reported to RHT that they're focusing on professional development, retention and sign-on bonuses to attract and keep IT professionals.

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Produced by Carole R. Hedden

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Salesforce.com

wedding photography company had to build hooks between Salesforce.com's applications and marketing automation software from Eloqua Corp. Now Bella has hired a third-party consultant to link the Salesforce.com tools to Sage Software Inc.'s Peachtree accounting application.

However, Kramer said other vendors should take the initiative to develop hooks to Salesforce.com's software as well.

There will always be a debate over whether it's better to standardize on a single application platform or use best-of-breed systems, he noted. But he said that he's willing to accept the inherent problems of the latter approach. By using Salesforce.com's software, Kramer added, "we don't sacrifice on the technology that manages our biggest asset: our customer relationships."

In some cases, though, the lack of widespread integration offerings and the cost of running separate CRM and back-office systems have led users to defect from Salesforce.com.

"If I were to say one single reason for our change, it was that we needed tight integration," said Flora Sun, chief operating officer at Adina for Life Inc. in San Francisco. "We needed fully functional end-to-end processes."

In April, the beverage maker switched from Salesforce.com and a mix of accounting and inventory systems based on Excel, QuickBooks and home-grown applications to an integrated system hosted by NetSuite Inc. Previously, Adina had tried to dovetail Salesforce.com and its other applications "by doing jury-rigging," Sun said. "It was just very laborious, and we constantly had to have someone watch over it."

Portland, Ore.-based Learning.com cut over from Salesforce.com to NetSuite last

Software Update

September in order to get an accounting system that was tied to CRM applications, said Douglas Stein, vice president of technology and development at the provider of online educational services.

The license fees charged by the two vendors are about the same, Stein said, but be added that the change has resulted in a lower total cost of ownership. He estimated that Learning.com could save hundreds of thousands of dollars because it won't need to add technical staffers. Just avoiding the cost of integrating the CRM and accounting applications saved the company about $60,000, Stein said.

Salesforce.com is taking steps to address the integration concerns. In January, the San Francisco-based vendor launched its AppExchange software marketplace, which lets users buy third-party applications that can be linked to their Salesforce.com systems.

And last week, as part of its Summer '06 software upgrade, Salesforce.com added a ready-to-use connector to SAP R/3. The Java-based connector will enable Salesforce.com's applications to share customer data with R/3 and synchronize the information, said Kendall Collins, the CRM vendor's vice president of product marketing.

No other integration links are in the works, Collins said. But, be added, "on integration, we clearly want to take the leadership role." He said that 23 packaged connectors are currently available on the AppExchange Web site.

"I was encouraged by what I saw with the R/3 integration," said Chad Rycenga, an IT director at Charter Communications Inc. in St. Louis. The cable TV and broadband services provider uses Salesforce.com's software to support its business customers and runs a mix of AS/400 and mainframe back-end applications.

Salesforce.com is attempting to appear integration-friendly, said Martin Schneider, an analyst at The 451 Group in New York. "But integration, regardless if you're deploying software as a service or on-premise applications, is hard work," he said. ▸

Users See Fewer Service Outages

THE SEMI-PUBLIC service outages that plagued Salesforce.com in late 2005 and earlier this year are now largely a thing of the past, according to several users who were affected by the problems.

The hosted CRM vendor suffered a series of disruptions in December, January and February, leaving customers unable to access its applications. But the users interviewed last week said that the technology now seems to be stable.

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Salesforce.com

wedding photography company had to build hooks between Salesforce.com's applications and marketing automation software from Eloqua Corp. Now Bella has hired a third-party consultant to link the Salesforce.com tools to Sage Software Inc.'s Peachtree accounting application.

However, Kramer said other vendors should take the initiative to develop hooks to Salesforce.com's software as well.

There will always be a debate over whether it's better to standardize on a single application platform or use best-of-breed systems, he noted. But he said that he's willing to accept the inherent problems of the latter approach. By using Salesforce.com's software, Kramer added, "we don't sacrifice on the technology that manages our biggest asset: our customer relationships."

In some cases, though, the lack of widespread integration offerings and the cost of running separate CRM and back-office systems have led users to defect from Salesforce.com.

"If I were to say one single reason for our change, it was that we needed tight integration," said Flora Sun, chief operating officer at Adina for Life Inc. in San Francisco. "We needed fully functional end-to-end processes."

In April, the beverage maker switched from Salesforce.com and a mix of accounting and inventory systems based on Excel, QuickBooks and homegrown applications to an integrated system hosted by NetSuite Inc. Previously, Adina had tried to dovetail Salesforce.com and its other applications "by doing jury-rigging," Sun said. "It was just very laborious, and we constantly had to have someone watch over it."

Portland, Ore.-based Learning.com cut over from Salesforce.com to NetSuite last September in order to get an accounting system that was tied to CRM applications, said Douglas Stein, vice president of technology and development at the provider of online educational services.

The license fees charged by the two vendors are about the same, Stein said, but he added that the change has resulted in a lower total cost of ownership. He estimated that Learning.com could save hundreds of thousands of dollars because it won't need to add technical staffers. Just avoiding the cost of integrating the CRM and accounting applications saved the company about $60,000, Stein said.

Salesforce.com is taking steps to address the integration concerns. In January, the San Francisco-based vendor launched its AppExchange software marketplace, which lets users buy third-party applications that can be linked to their Salesforce.com systems.

And last week, as part of its Summer '06 software upgrade, Salesforce.com added a ready-to-use connector to SAP R/3. The Java-based connector will enable Salesforce.com's applications to share customer data with R/3 and synchronize the information, said Kendall Collins, the CRM vendor's vice president of product marketing.

No other integration links are in the works, Collins said. But, he added, "on integration, we clearly want to take the leadership role." He said that 23 packaged connectors are currently available on the AppExchange Web site.

"I was encouraged by what I saw with the R/3 integration," said Chad Rycenga, an IT director at Charter Communications Inc. in St. Louis. The cable TV and broadband services provider uses Salesforce.com's software to support its business customers and runs a mix of AS/400 and mainframe back-end applications.

Salesforce.com is attempting to appear integration-friendly, said Martin Schneider, an analyst at The 451 Group in New York. "But integration, regardless if you're deploying software as a service or on-premise applications, is hard work," he said. ●

Software Update

Users See Fewer Service Outages

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CANADIAN POSTMASTER: POSTMASTER: BPA ABM

FRANK HAYES ■ FRANKLY SPEAKING

Twelve to Compete

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Someone cynical might think this was just a publicity stunt as Microsoft faces a new round of antitrust troubles.

But maybe — just maybe — Microsoft still just doesn't get competition.

Look, consider what the company says it will do to promote competition: not sabotage PC makers' ability to configure PCs with non-Microsoft software. And not retaliate against vendors that do so. And not cram Windows Live down users' throats. And make Windows programming interfaces, protocols and patents available (but not necessarily for free). And be in favor of Net neutrality.

Pretty lame, eh? It's largely what Microsoft has already been forced to do by the courts. But that's what you get when your ideas of competition come from your lawyer.

Microsoft can do better. It needs to do better, what with its market share eroding, its stock price stagnant and its reputation sinking. And as customers, we want Microsoft to do better.

But Microsoft thinks it just needs to do a *little* better at competition. A tweak here, a small fix of anticompetitive behavior there.

Wrong. Things have changed. A dozen legalistic "principles" are nice, but what Microsoft needs are action items — and big ones at that.

So in the interest of lighting a fire under Microsoft *and* its rivals, here are 12 suggestions that would *really* promote competition at Microsoft:

■ Break up Windows. Do less integration, not more. Get rid of the monolithic structure and the dependencies it produces, and the complexity and fragility those dependencies create. Make Windows so modular that competitors can plug in their own versions of your features. Then make your features so good, no one will want the competition's.

■ Get that neat new stuff out of Microsoft Research's labs and on the street. Microsoft loves to talk about innovation. Show us some.

■ Encourage mashups. Don't just publish programming interfaces — give away the glue and make it easy to use. Make people want to buy Windows or use Windows Live because it's great for creating new and wonderful stuff, not because it's the same dreary junk everyone uses.

■ Quit pretending you're not in the hardware business. You make mice, keyboards and game machines, and they sell. When you create "concepts" like Tablet PCs, they collapse. Create hardware products, brand them, and sell them.

■ Give up on technical lock-in with proprietary protocols and formats. It doesn't work, and it just irritates customers.

■ Stop using the words "technically impossible." Nobody really believes there's anything Microsoft can't do.

■ Create new markets. Don't worry about capturing 100% of them — so what if other vendors or open-source projects pick up the crumbs? Be visionary, make magic happen, then compete like hell on the fresh playing field you've made.

■ Embrace change. Right now, Microsoft fears it. Hire some entrepreneurs and set them to work creating a Windows-killer. Eat your own lunch before someone else does.

■ Seduce your customers. Don't lie to them, mislead them or threaten them. Draw them in by making them love you, not fear or hate or resent you.

■ Compete. Hard. With newer, better, faster, cleaner, smarter products and services. Make customers want to dig into their own pockets. Make them salivate. Make them lust after things they don't have to accept but really desire.

■ Be first, be on target, be unique. You win biggest when you're offering what customers want — and nobody else has.

■ Quit following. Start leading. And soon you'll be promoting more competition than you know what to do with. ▸

FRANK HAYES, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

Now *That's* a Compliment

Company announces a complete systems replacement, and this purchasing manager moans that it will be three years before the new systems work as well as the old ones did. Wanna bet? asks IT pilot fish. They agree: After three years, purchasing guy will decide whether IT met that deadline, and the winner will buy the loser lunch at the restaurant of his choice anywhere in the country. But less than a year later, fish is headed for a new job. He tells purchasing manager the bet is off, and purchasing manager accuses fish of reneging on their bet. Reports fish, "He said, 'I thought you would be gone before now. I knew that the only way this project could succeed was if you stuck around.' What could I say? I thanked him."

SHARK TANK

Crash – For Real

User calls help desk to say that his PC has crashed and won't boot. Sounds pretty standard, but when this pilot fish arrives, he finds the PC on the floor with pieces of heavy-duty Velcro tape on its top. "He had attached it to the underside of his desk to save room," sighs fish. "When it 'crashed,' it had actually lost its grip and crashed to the floor. Needless to say, we may not get much data from the hard drive – it was spinning pretty well when it hit the ground."

But the People Waiting Were . . .

IT installs a big-screen TV in a waiting room. It's intended to display informational videos and is driven by a PC in an adjoining room. But this pilot fish soon gets a call asking to have the PC better secured. "It seems a bored worker saw an unused computer and started playing a game of pinball on it," says fish. "He entertained a whole room of people next door until the manager saw it. The manager was not amused."

Yeah, That Should Do It

This company is moving jobs offshore, and bosses decide to reduce the number of IT support people even before cutting the rest of the staff. "In the middle of this, management decides to dedicate 20% of our team to providing support via chat," says a pilot fish who will soon be out of a job. "Then they compound the problem by dedicating another 30% to network connectivity issues. That means the incoming call volume once handled by 40 people is now handled by seven people, assuming everyone shows up. Our service levels have now dropped to about 40% of where they were before. Now our manager tells us that management has determined the problem with our very low service levels: We need to improve morale."

IMPROVE SHARKY'S MORALE. Send your true tale of IT life to me at **sharky@computerworld.com.** You'll get a stylish Shark shirt if I use it. And check Sharky's blog, browse the Sharkives and sign up for Shark Tank home delivery at **computerworld.com/sharky.**

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8:00am to 8:30am	**Registration and Networking Breakfast**
8:30am to 8:45am	**Introduction and Overview** Don Tennant, Vice President and Editor in Chief, Computerworld
8:45am to 9:30am	**Moving Towards the Agile Enterprise** Michael Hugos, Former CIO, and Author of *Essentials of Supply Chain Management* and *Building the Real Time Enterprise: An Executive Briefing*
9:30am to 9:45am	**IT End User Case Study: Maryland Automobile Insurance Fund** Cindy Hughes, Chief Information Officer and Director of IT, Maryland Automobile Insurance Fund (MAIF)
10:00am to 10:15am	**Refreshment and Networking Break**
10:15am to 10:45am	**IT End User Case Study: Motorola** Toby Redshaw, Corporate Vice President of IT Strategy, Architecture and eBusiness, Motorola
10:45am to 11:15am	**IT End User Case Study: TD Ameritrade** Gary Greenwald, Chief Technology Officer, TD Ameritrade
11:15am to Noon	**Panel Discussion** Moderator: Don Tennant, Vice President and Editor in Chief, Computerworld Panelists: Cindy Hughes, Chief Information Officer and Director of IT, Maryland Automobile Insurance Fund (MAIF); Michael Hugos, Former CIO; Toby Redshaw, Corporate Vice President of IT Strategy, Architecture and eBusiness, Motorola; Gary Greenwald, Chief Technology Officer, TD Ameritrade

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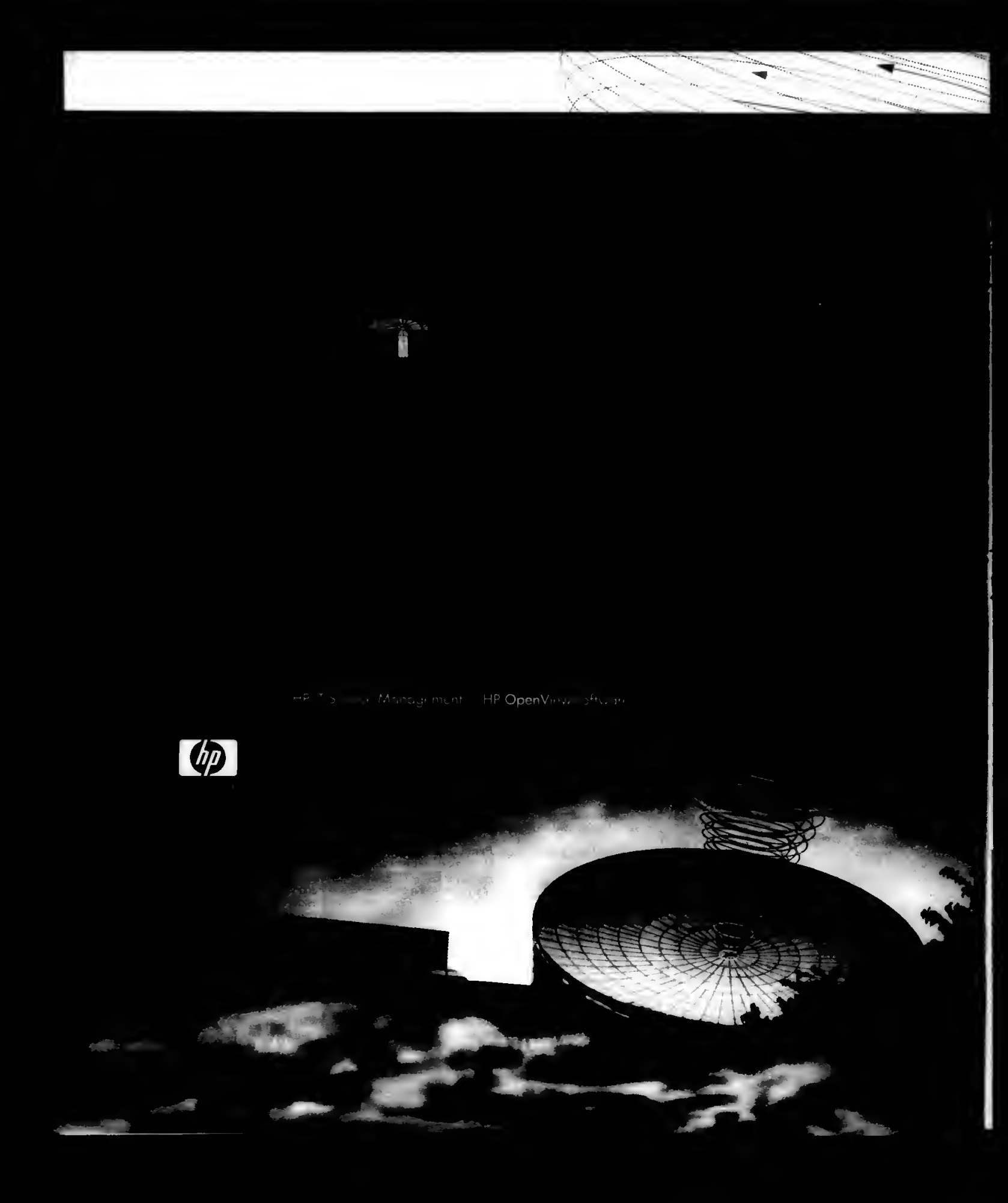
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